SUPERO®

# SUPERO® X7DBR-8+
# SUPERO® X7DBR-i+

# USER'S MANUAL

Revision 1.0b

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# Preface

## About This Manual

This manual is written for system integrators, PC technicians and knowledgeable PC users. It provides information for the installation and use of the SUPER® X7DBR-8+/X7DBR-i+ motherboard. The SUPER® X7DBR-8+/X7DBR-i+ supports dual Intel XEON 64-bit dual core processors at a front side bus speed of 667 MHz/1.066 GHz/1.333 GHz. With dual 64-bit Xeon dual core processors, the 5000P chipset, and 16 DDR2 FBD 667/533 memory modules built-in, the X7DBR-8+/X7DBR-i+ offers substantial functionality and performance enhancements to the motherboards based on the NetBurst microarchitecture while remaining compatible with the 32-bit based software. The features include Intel Hyper-Threading Technology, Virtualization Technoogy, Hyper Pipelined Technology, Execution Trace Cache, Thermal Monitor 1/2 (TM1/TM2), Enhanced Intel SpeedStep technology, Advanced Dynamic Execution, Advanced Transfer Cache, Streaming SIMD Extensions 3 (SSE3) and Extended Memory 64 Technology (EM64T). These features allow the motherboard to operate at much higher speeds with better power management in much safer environments than the traditional motherboards. The X7DBR-8+/X7DBR-i+ is ideal for high performance dual processor (DP) enterprise server environments. This product is intended to be professionally installed.

## Manual Organization

**Chapter 1** describes the features, specifications and performance of the mainboard and provides detailed information about the chipset.

**Chapter 2** provides hardware installation instructions. Read this chapter when installing the processor, memory modules and other hardware components into the system. If you encounter any problems, see **Chapter 3**, which describes troubleshooting procedures for the video, the memory and the system setup stored in CMOS.

**Chapter 4** includes an introduction to BIOS and provides detailed information on running the CMOS Setup utility.

**Appendix A** and **Appendix B** provide BIOS POST Messages and POST Codes. **Appendix C, Appendix D and Appendix E** list HostRAID Setup Guidelines and Other Software Driver and Program Installation Instructions.

## Conventions Used in the Manual:

Special attention should be given to the following symbols for proper installation and to prevent damage done to the components or injury to yourself:

**Danger/Caution:** Instructions to be strictly followed to prevent catastrophic system failure or to avoid bodily injury.

**Warning:** Important information given to ensure proper system installation or to prevent damage to the components.

**(*Note): Note:** Additional Information given to differentiate various models or to ensure correct system setup.

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# Chapter 1
# Introduction

## 1-1 Overview

### Checklist

Congratulations on purchasing your computer motherboard from an acknowledged leader in the industry. Supermicro boards are designed with the utmost attention to detail to provide you with the highest standards in quality and performance. Check that the following items have all been included with your motherboard. If anything listed here is damaged or missing, contact your retailer. All are included in the Retail Box.

One (1) Supermicro Mainboard

One (1) ribbon cable for IDE devices (CBL-036L-02)

One (1) floppy ribbon cable (CBL-022)

One (1) Supermicro CD containing drivers and utilities

One (1) User's/BIOS Manual

One (1) Ultra 320 SCSI User's Manual (*X7DBR-8+ only)

# Contacting Super Micro

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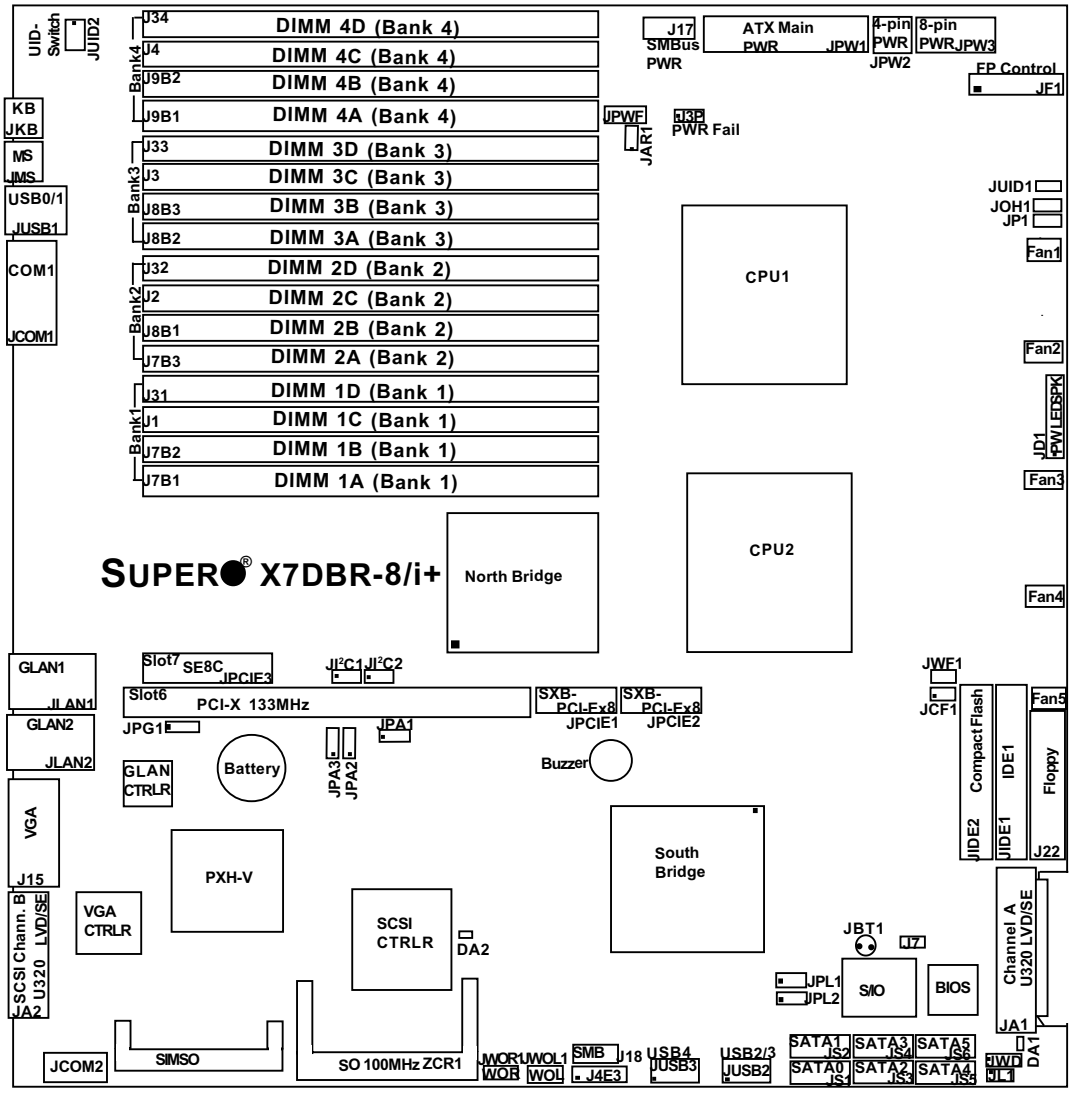
**Figure 1-1. SUPER® X7DBR-8+/X7DBR-i+ Image**

(***Note:** The drawings and pictures shown in this manual were based on the latest PCB Revision available at the time of publishing of the manual. The motherboard you've received may or may not look exactly the same as the graphics shown in the manual.)

**Figure 1-2. SUPER® X7DBR-8+/X7DBR-i+ Motherboard Layout**

(not drawn to scale)




**Notes:**

1. Jumpers not indicated are for test purposes only.
2. See Chapter 2 for detailed information on jumpers, I/O ports and JF1 front panel connections.
3. "■" indicates the location of Pin 1.
4. SCSI is for the X7DBR-8+ only.
5. For Compact Card to work properly, please enable JCF1 by putting cap on it and connect JWF1 to a power supply.
6. SE8C is a connector specially designed for 2U riser cards only. It supports PCI-Express cards through special 2U riser cards only.

# Quick Reference ( X7DBR-8+/X7DBR-i+)

| Jumper | Description | Default Setting |
|---|---|---|
| J3P | 3rd PWR Failure Detect | Off (Disabled) |
| JBT1 | CMOS Clear | See Chapter 2 |
| JCF1 | Compact Card Master/Slave Select | On (Master) |
| JI$^2$C1/JI$^2$C2 | SMBBus to PCI-E Slots | Off (Disabled) |
| JPA1 (X7DBR-8+) | SCSI Controller Enable | Pins 1-2 (Enabled) |
| JPA2, JPA3 | SCSI CHA(JPA2),CHB(JPA3)Term.En | Off (Enabled) (X7DBR-8+) |
| JPG1 | VGA Enable | Pins 1-2 (Enabled) |
| JPL1/ JPL2 | GLAN1/GLAN2 Enable | Pins 1-2 (Enabled) |
| JWD | Watch Dog | Pins 1-2 (Reset) |

| Connector | Description |
|---|---|
| ATX PWR (JPW1) | Primary 24-Pin ATX PWR Connector |
| Aux. PWR/CPU PWR | +12V 4-pin PWR (JWP2)/+12V 8-pin PWR(JPW3) |
| Buzzer | Internal Speaker |
| Chassis Intrusion (JL1) | Chassis Intrusion Header |
| COM1/COM2 | COM1(JCOM1)/COM2(JCOM2) Serial Port Connectors |
| Compact PWR (JWF1) | Compact Card PWR Connector (*Used if JCF1 is on.) |
| DA1/DA2 | SCSI Channel A/B Activity LED Indicators(See Chapt.2) |
| DIMM#1A-DIMM#4D | Memory DDR2 Fully Buffered (FBD) Slots |
| FAN 1-5 | Fans 1-5 (CPU Fans/Chassis Fans) |
| Floppy (J22) | Floppy Disk Drive Connector |
| FP CTRL (JF1) | Front Control Panel Connector |
| GLAN 1/2 (JLAN1/2) | G-bit Ethernet Ports |
| IDE1/IDE2 (*Note) | IDE1 Hard Drive (JIDE1)/Compact Flash Card (JIDE2) |
| OH LED (JOH1) | Overheat LED |
| JAR1 | Alarm Reset Enable |
| JPWF | Power Supply Failure Connector (See Chapter 2) |
| JPCIE1, JPCIE2 | PCI-Exp. x8 Slots |
| JPCIE3 (Slot7) | SE8C Slot (See Note 6 on Page 1-4) |
| JUID1, JUID2 | Universal Idenfication Switches 1 & 2 |
| PCI-X (Slot6) | PCI-X 133MHz Slot |
| PWR LED/SPKR (JD1) | PWR LED(pins1-3)/SpeakerHeader (pins 4-7) |
| PWR SMB (J17) | Power System Management (I$^2$C) Header |
| SATA0-SATA5 (JS1-6) | Intel SATA 0-5 Connectors |
| SCSI Chan. A/B (JA1/JA2) | SCSI Channel A/Channel B Connectors (*X7DBR-8+) |
| SMB (J18) | System Management Bus Header |
| SIMSO | SIM SO-DIMM IPMI Slot |
| SO ZCR1 | Zero Channel RAID Card Slot |
| USB 0/1,USB 2/3,USB4 | Back Panel USB 0/1, Front Panel USB 2/3, FP USB4 |
| VGA (J15) | VGA Connector |
| WOL (JWOL1) | Wake-on-LAN Header |
| WOR (JWOR) | Wake-on-Ring Header |

## Motherboard Features

### CPU

- Dual Intel® 64-bit Xeon LGA 771 dual core processors at a front side bus speed of 667 MHz/1.066 GHz/1.333 GHz

### Memory

- 16 240-pin DIMM sockets with support up to 64 GB DDR2 Fully Buffered (FBD) ECC 667/533 Memory (*See Section 2-3 in Chapter 2 for DIMM Slot Population.)

### Chipset

- Intel 5000P chipset, including: the 5000P Memory Control Hub (MCH), the Enterprise South Bridge 2 (ESB2), and the I/O subsystem (PXHV).

### Expansion Slots

- Three PCI-Express slots (*three slots at x8@4GB/sec.)
- One 64-bit PCI-X slot (*One PCI-X-133 MHz slot: Slot 6)

### BIOS

- 8 Mb Phoenix® Flash ROM
- DMI 2.3, PCI 2.2, ACPI 1.0/2.0, Plug and Play (PnP), SMBIOS 2.3 and USB Keyboard support

### PC Health Monitoring

- Onboard voltage monitors for CPU cores, chipset voltage, +1.8V, +3.3V, +5V, +12V, –12V, +3.3V Standby, +5V standby and VBAT
- Fan status monitor with firmware control
- CPU/chassis temperature monitors
- Low noise fan speed control
- Environmental temperature monitor and control
- Platform Environment Control Interface (PECI) ready
- $I^2C$ temperature sensing logic
- Thermal Monitor 2 (TM2) support
- CPU slow-down on temperature overheat
- CPU thermal trip support for processor protection, power LED
- Power-up mode control for recovery from AC power loss
- Auto-switching voltage regulator for CPU cores
- System overheat/Fan Fail LED Indicator and control
- Chassis intrusion detection
- System resource alert via Supero Doctor III

**ACPI Features**

- Slow blinking LED for suspend state indicator
- Main switch override mechanism
- ACPI Power Management
- Power-on mode for power recovery

**Onboard I/O**

- Six SATA ports (supporting RAID0, RAID1, RAID10 and RAID5)
- One SIMSO IPMI socket (AOC-SIMSO)
- One SOZCR socket (AOC-SOZCR1)
- Two Giga-bit LAN ports with IOAT Technology
- One EIDE Ultra DMA/100 bus master interface
- One IDE w/Compact Flash Card supported
- One floppy port interface
- Two COM ports(1 header, 1 port)
- Up to five USB 2.0 (Universal Serial Bus) (2 ports, 3 Headers)
- ATI ES1000 16MB Graphic Controller
- Super I/O: Winbond W83627HG w/Hardware Monitor support: W83793G

**Other**

- Internal/external modem ring-on
- Wake-on-LAN (WOL)
- Wake-on-Ring (WOR)
- Console redirection
- Onboard Fan Speed Control by Thermal Management via BIOS

**CD/Diskette Utilities**

- BIOS flash upgrade utility and device drivers

**Dimensions**

- ATX Ext. 13.68" (L) x 13.00" (W) (347.47mm x 330.2mm)

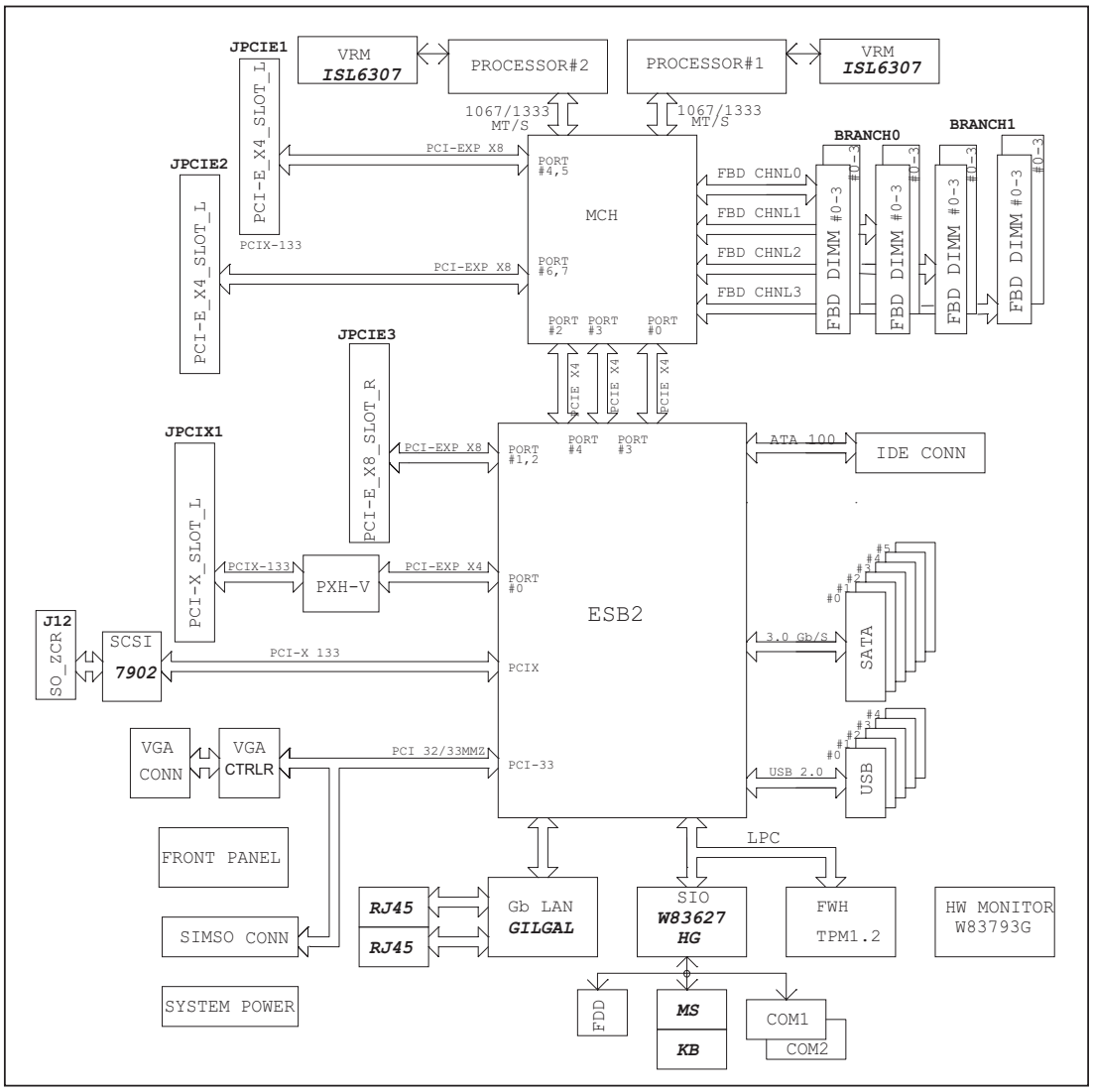



**Figure 1-9. Block Diagram of the 5000P Chipset**

**Note:** This is a general chipset block diagram. Please see the previous Motherboard Features pages for details on the features of each motherboard.

## 1-2 Chipset Overview

Built upon the functionality and the capability of the 5000P chipset, the X7DBR-8+/X7DBR-i+ motherboard provides the performance and feature set required for dual processor-based servers with configuration options optimized for communications, presentation, storage, computation or database applications. The 5000P chipset supports a single or dual Dempsey 64-bit dual core processor(s) with front side bus speeds of up to 1.333 GHz. The chipset consists of the 5000P Memory Controller Hub (MCH), the Enterprise South Bridge 2 (ESB2), and the I/O subsystem (PXHV).

The 5000P MCH chipset is designed for symmetric multiprocessing across two independent front side bus interfaces. Each front side bus uses a 64-bit wide, 1333 MHz data bus that transfers data at 10.7 GB/sec. The MCH chipset connects up to 16 Fully Buffered DIMM modules, providing up to 64 GB of DDR2 FBD ECC memory. The MCH chipset also provides three x8 PCI-Express and one x4 ESI interface to the ESB2. In addition, the 5000P chipset offers a wide range of RAS features, including memory interface ECC, x4/x8 Single Device Data Correction, CRC, parity protection, memory mirroring and memory sparing.

**Xeon Dual Core Processor Features**

Designed to be used with conjunction of the 5000P chipset, the Xeon Dual Core Processor provides a feature set as follows:

**The Xeon Dual Core Processor**

*L1 Cache Size: Instruction Cache (32KB/16KB), Data Cache (32KB/24KB)

*L2 Cache Size: 4MB/2MB (per core)

*Data Bus Transfer Rate: 8.5 GB/s

*Package: FC-LGA6/FC-LGA4, 771 Lands

## 1-3 Special Features

### Recovery from AC Power Loss

BIOS provides a setting for you to determine how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must hit the power switch to turn it back on) or for it to automatically return to a power- on state. See the Power Lost Control setting in the Advanced section to change this setting. (***Note**: Default: Last State).

## 1-4 PC Health Monitoring

This section describes the PC health monitoring features of the X7DBR-8+/X7DBR-i+. All have an onboard System Hardware Monitor chip that supports PC health monitoring.

### Onboard Voltage Monitors for CPU Cores, Memory, Chipset, +1.8V, +3.3V, +5V, +12V, −12V, +3.3V Standby, +5V standby and VBAT

An onboard voltage monitor will scan these voltages continuously. Once a voltage becomes unstable, a warning is given or an error message is sent to the screen. Users can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

### Fan Status Monitor with Firmware Control

The PC health monitor can check the RPM status of the cooling fans. The onboard CPU and chassis fans are controlled by Thermal Management via BIOS (under Hardware Monitoring in the Advanced Setting).

### Environmental Temperature Control

The thermal control sensor monitors the CPU temperature in real time and will turn on the thermal control fan whenever the CPU temperature exceeds a user-defined threshold. The overheat circuitry runs independently from the CPU. Once it detects that the CPU temperature is too high, it will automatically turn on the thermal fan control to prevent any overheat damage to the CPU. The onboard chassis thermal circuitry can monitor the overall system temperature and alert users when the chassis temperature is too high.

### CPU Overheat LED and Control

This feature is available when the user enables the CPU overheat warning function in the BIOS. This allows the user to define an overheat temperature. When this temperature is exceeded, both the overheat fan and the warning LED are triggered.

### System Resource Alert

This feature is available when used with Supero Doctor III in the Windows OS environment or used with Supero Doctor II in Linux. SDIII is used to notify the user of certain system events. For example, if the system is running low on virtual

memory and there is insufficient hard drive space for saving the data, you can be alerted of the potential problem.

## 1-5 ACPI Features

ACPI stands for Advanced Configuration and Power Interface. The ACPI specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a PC system, including its hardware, operating system and application software. This enables the system to automatically turn on and off peripherals such as CD-ROMs, network cards, hard disk drives and printers. This also includes consumer devices connected to the PC such as VCRs, TVs, telephones and stereos.

In addition to enabling operating system-directed power management, ACPI provides a generic system event mechanism for Plug and Play and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures while providing a processor architecture-independent implementation that is compatible with Windows 2000, Windows XP and Windows 2003 Server Operating Systems.

### Slow Blinking LED for Suspend-State Indicator

When the CPU goes into a suspend state, the chassis power LED will start blinking to indicate that the CPU is in suspend mode. When the user presses any key, the CPU will wake-up and the LED will automatically stop blinking and remain on.

### Main Switch Override Mechanism

When an ATX power supply is used, the power button can function as a system suspend button to make the system enter a SoftOff state. The monitor will be suspended and the hard drive will spin down. Pressing the power button again will cause the whole system to wake-up. During the SoftOff state, the ATX power supply provides power to keep the required circuitry in the system alive. In case the system malfunctions and you want to turn off the power, just press and hold the power button for 4 seconds. This option can be set in the Power section of the BIOS Setup routine.

### External Modem Ring-On

Wake-up events can be triggered by a device such as the external modem ringing when the system is in the SoftOff state. Note that external modem ring-on can only be used with an ATX 2.01 (or above) compliant power supply.

### Wake-On-LAN (WOL)

Wake-On-LAN is defined as the ability of a management application to remotely power up a computer that is powered off. Remote PC setup, up-dates and asset tracking can occur after hours and on weekends so that daily LAN traffic is kept to a minimum and users are not interrupted. The motherboard has a 3-pin header (WOL) to connect to the 3-pin header on a Network Interface Card (NIC) that has WOL capability. Wake-On-LAN must be enabled in BIOS. Note that Wake-On-LAN can only be used with an ATX 2.01 (or above) compliant power supply.

## 1-6 Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for processors that have high CPU clock rates.

The X7DBR-8+/X7DBR-i+ can only accommodate 24-pin ATX power supplies. Although most power supplies generally meet the specifications required by the CPU, some are inadequate. In addition, the 12V 4-pin and the 12V 8-pin power connections are also required to ensure adequate power supply to the system. Also your power supply must supply 1.5A for the Ethernet ports.

It is strongly recommended that you use a high quality power supply that meets ATX power supply Specification 2.01 or above. It must also be SSI compliant (info at http://www.ssiforum.org/). Additionally, in areas where noisy power transmission is present, you may choose to install a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

## 1-7 Super I/O

The disk drive adapter functions of the Super I/O chip include a floppy disk drive controller that is compatible with industry standard 82077/765, a data separator, write pre-compensation circuitry, decode logic, data rate selection, a clock generator, drive interface control logic and interrupt and DMA logic. The wide range of functions integrated onto the Super I/O greatly reduces the number of components required for interfacing with floppy disk drives. The Super I/O supports 360 K, 720 K, 1.2 M, 1.44 M or 2.88 M disk drives and data transfer rates of 250 Kb/s, 500 Kb/s or 1 Mb/s.It also provides two high-speed, 16550 compatible serial communication ports (UARTs), one of which supports serial infrared communication. Each UART includes a 16-byte send/receive FIFO, a programmable baud rate generator, complete modem control capability and a processor interrupt system. Both UARTs provide legacy speed with baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support higher speed modems.

The Super I/O supports one PC-compatible printer port (SPP), Bidirectional Printer Port (BPP) , Enhanced Parallel Port (EPP) or Extended Capabilities Port (ECP).

The Super I/O provides functions that comply with ACPI (Advanced Configuration and Power Interface), which includes support of legacy and ACPI power management through an SMI or SCI function pin. It also features auto power management to reduce power consumption.

The IRQs, DMAs and I/O space resources of the Super I/O can flexibly adjust to meet ISA PnP requirements, which support ACPI and APM (Advanced Power Management).

# Chapter 2
# Installation

## 2-1 Static-Sensitive Devices

Electric-Static-Discharge (ESD) can damage electronic components. To prevent damage to your system board, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

### Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.
- Use only the correct type of onboard CMOS battery as specified by the manufacturer. Do not install the onboard battery upside down to avoid possible explosion.

### Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

## 2-2 Processor and Heatsink Fan Installation

***When handling the processor package, avoid placing direct pressure on the label area of the fan.***

**(*Notes:** 1. Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.

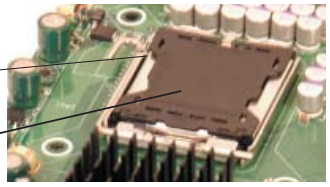
2. Intel's boxed Xeon CPU package contains the CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel-certified multi-directional heatsink and fan.

3. Make sure to install the motherboard into the chassis before you install the CPU heatsink and fan.)

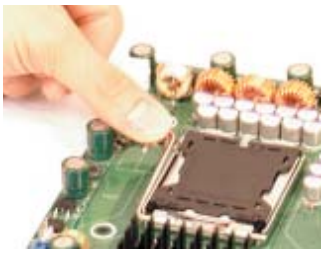
4. When purchasing an LGA 771 CPU or when receiving a motherboard with an LGA 771 CPU pre-installed, make sure that the CPU plastic cap is in place and none of the CPU pins are bent; otherwise, contact the retailer immediately.

5. Refer to the MB Features Section for more details on CPU support.

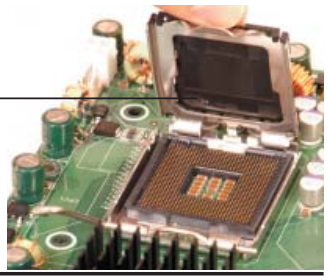
### Installation of the LGA771 Processor




1. Press the socket clip to release the load plate, which covers the CPU socket, from its locking position.



2. Gently lift the socket clip to open the load plate.



3. Use your thumb and your index finger to hold the CPU at the North Center Edge and the South Center Edge of the CPU.

4. Align CPU Pin1 (the CPU corner marked with a triangle) against the socket corner that is marked with a triangle cutout.

5. Align the CPU key that is the semi-circle cutout below a gold dot against the socket key, the notch on the same side of the triangle cutout on the socket.

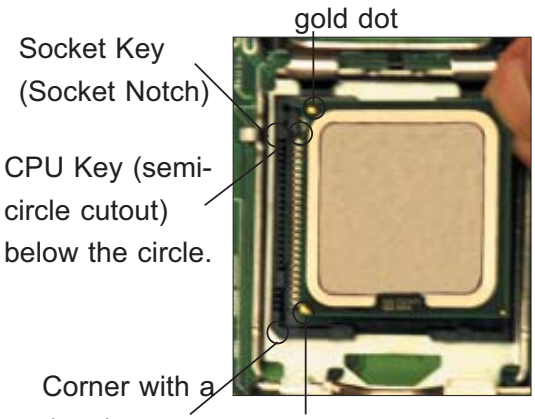
6. Once aligned, carefully lower the CPU straight down to the socket. (**Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically. Do not rub the CPU against the surface or against any pins of the socket to avoid damage to the CPU or the socket.)

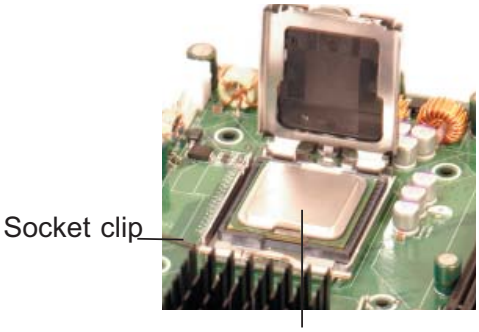
7. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.

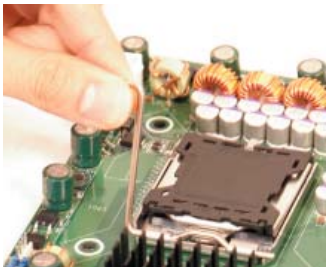
8. Use your thumb to gently push the socket clip down to the clip lock.

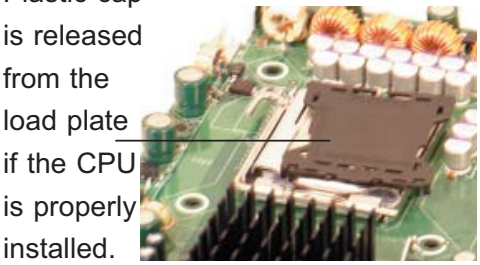
9. If the CPU is properly installed into the socket, the plastic cap will be automatically released from the load plate when the clip is pushed in the clip lock. Remove the plastic cap from the motherboard.

(*Warning: Please keep the plastic cap. The motherboard and the CPU must be shipped with the plastic cap properly installed to protect the CPU pins. Shipment without the CPU plastic cap properly installed will void the warranty.)



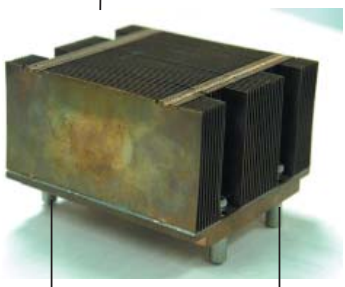





## Installation of the Heatsink

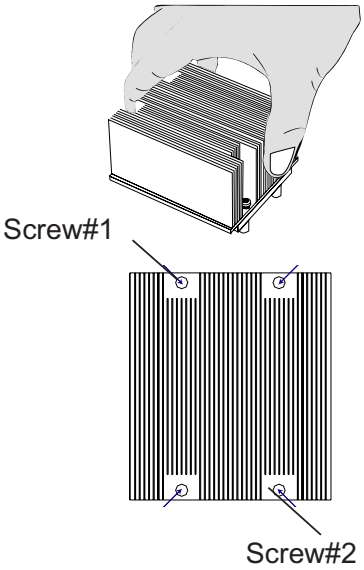
### CEK Heatsink Installation

CEK Passive Heatsink




1. Do not apply any thermal grease to the heatsink or the CPU die-the required amount has already been applied.

2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the retention mechanism.



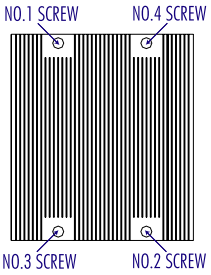

3. Screw in two diagonal screws (ie the #1 and the #2 screws) until just snug (-do not fully tighten the screws to avoid possible damage to the CPU.)

4. Finish the installation by fully tightening all four screws.

### To Un-install the Heatsink

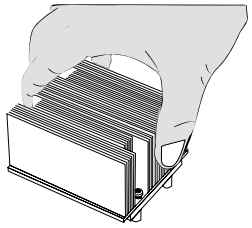
**(Warning:** We do not recommend that the CPU or the heatsink be removed. However, if you do need to uninstall the heatsink, please follow the instructions below to uninstall the heatsink to prevent damage done to the CPU or the CPU socket.)

1. Unscrew and remove the heatsink screws from the motherboard in the sequence as show in the picture on the right.




2. Hold the heatsink as show in the picture on the right and gently wiggle the heatsink to loosen it from the CPU. (Do not use excessive force when wiggling the heatsink!!)

3. Once the heatsink is loosened, remove the heatsink from the CPU socket.



4. Clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease on the surface before you re-install the CPU and the heatsink.

### Mounting the Motherboard in the Chassis

All motherboards have standard mounting holes to fit different types of chassis. Make sure that the locations of all the mounting holes for both motherboard and chassis match. Make sure that the metal standoffs click in or are screwed in tightly. Then, use a screwdriver to secure the motherboard onto the motherboard tray. (*Note: some components are very close to the mounting holes. Please take precautionary measures to prevent damage done to these components when you install the motherboard to the chassis.)

## 2-3 Installing DIMMs

Note: Check the Supermicro web site for recommended memory modules.

***CAUTION***

Exercise extreme care when installing or removing DIMM modules to prevent any possible damage. Also note that the memory is interleaved to improve performance (see step 1).

### DIMM Installation (See Figure 2-2)

1. Insert the desired number of DIMMs into the memory slots, starting with DIMM #1A. The memory scheme is interleaved so you must install two modules at a time, beginning with DIMM #1A, then DIMM #2A and so on. (*See the Memory Installation Table Below.)
2. Insert each DIMM module vertically into its slot. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM module incorrectly.
3. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules (see step 1 above).

**Memory Support**

The X7DBR-8+/X7DBR-i+ supports up to 64 GB fully buffered (FBD) ECC DDR2 533/667 in 16 DIMMs. Populating DIMM modules with pairs of memory modules of the same size and same type **will result in Interleaved Memory which will increase memory performance.**

***Note 1**: Due to OS limitations, some operating systems may not show more than 4 GB of memory.

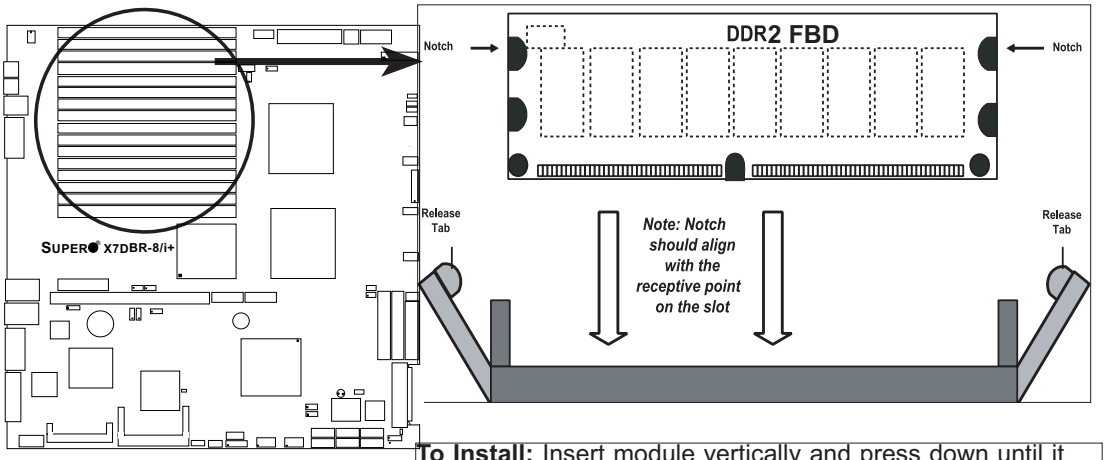
| Optimized DIMM Population Configurations | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Branch 0 | | | | | | | | Branch 1 | | | | | | | |
| Number of DIMMs | Bank 1 (Channel 0) | | | | Bank 2 (Channel 1) | | | | Bank 3 (Channel 2) | | | | Bank 4 (Channel 3) | | | |
| 2 DIMMs | 1A | --- | --- | --- | 2A | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4 DIMMs | 1A | --- | --- | --- | 2A | --- | --- | --- | 3A | --- | --- | --- | 4A | --- | --- | --- |
| 6 DIMMs | 1A | 1B | --- | --- | 2A | 2B | --- | --- | 3A | --- | --- | --- | 4A | --- | --- | --- |
| 8 DIMMs | 1A | 1B | --- | --- | 2A | 2B | --- | --- | 3A | 3B | --- | --- | 4A | 4B | --- | --- |
| 10 DIMMs | 1A | 1B | 1C | --- | 2A | 2B | 2C | --- | 3A | 3B | --- | --- | 4A | 4B | --- | --- |
| 12 DIMMs | 1A | 1B | 1C | --- | 2A | 2B | 2C | --- | 3A | 3B | 3C | --- | 4A | 4B | 4C | --- |
| 14 DIMMs | 1A | 1B | 1C | 1D | 2A | 2B | 2C | 2D | 3A | 3B | 3C | --- | 4A | 4B | 4C | --- |
| 16 DIMMs | 1A | 1B | 1C | 1D | 2A | 2B | 2C | 2D | 3A | 3B | 3C | 3D | 4A | 4B | 4C | 4D |

**(*Notes: i. DIMM slot# specified: DIMM slot to be populated; "---": DIMM slot not to be populated. ii. Both FBD 533 MHz and 667MHz DIMMs are supported; however, you need to use the memory modules of the same speed and of the same type on a motherboard. iii. Interleaved memory is supported when pairs of DIMM modules are installed. For best performance, please install memory modules of the same speed and same type in both Branch 0 and Branch 1. iv. For memory to work properly, you need to follow the restrictions listed above. )**

***Note 2**: Due to memory allocation to system devices, memory remaining available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional. (Refer to the Memory Availability Table below for details.)

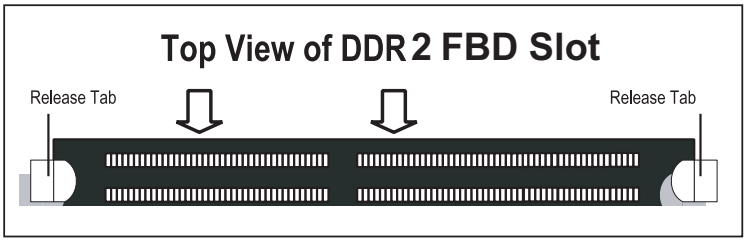
| Possible System Memory Allocation & Availability | | |
|---|---|---|
| System Device | Size | Physical Memory Remaining (-Available) (4 GB Total System Memory) |
| Firmware Hub flash memory (System BIOS) | 1 MB | 3.99 |
| Local APIC | 4 KB | 3.99 |
| Area Reserved for the chipset | 2 MB | 3.99 |
| I/O APIC (4 Kbytes) | 4 KB | 3.99 |
| PCI Enumeration Area 1 | 256 MB | 3.76 |
| PCI Express (256 MB) | 256 MB | 3.51 |
| PCI Enumeration Area 2 (if needed) -Aligned on 256-MB boundary- | 512 MB | 3.01 |
| VGA Memory | 16 MB | 2.85 |
| TSEG | 1 MB | 2.84 |
| Memory available to BIOS, OS, applications | | 2.84 |

**Figure 2-2. Installing and Removing DIMMs**




**To Install:** Insert module vertically and press down until it snaps into place. Pay attention to the alignment notch at the bottom.

**To Remove:**
Use your thumbs to gently push the release tabs near both ends of the module. This should release it from the slot.



## 2-4 Control Panel Connectors/IO Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 2-3 below for the colors and locations of the various I/O ports.

### A. Back Panel Connectors/IO Ports

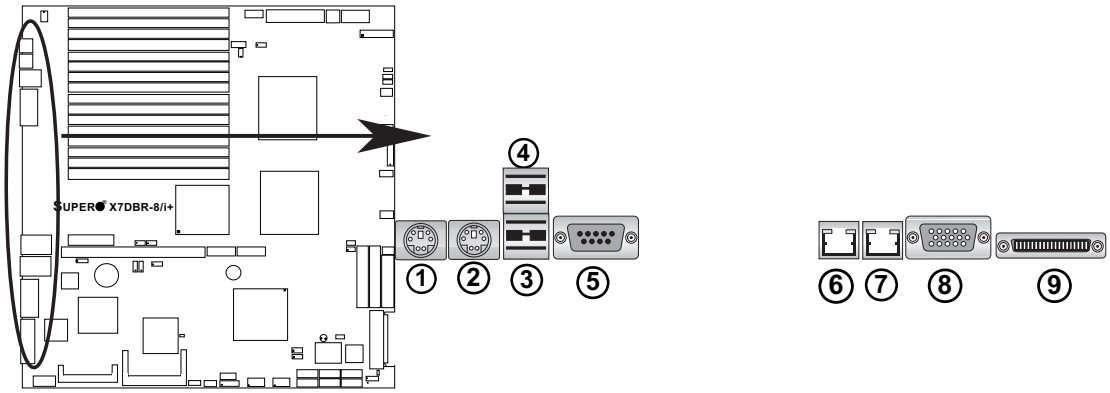



**Figure 2-3. Back Panel I/O Port Locations and Definitions**

### Back Panel Connectors

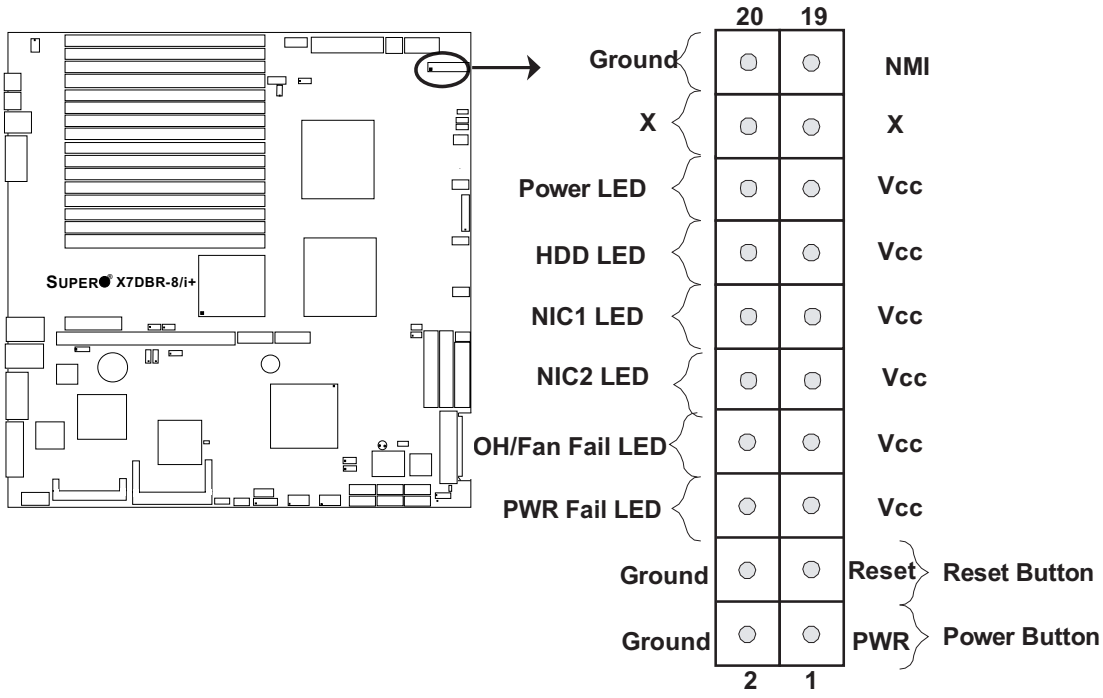
1. Keyboard (Purple)
2. PS/2 Mouse (Green)
3. Back Panel USB Port 0
4. Back Panel USB Port 1
5. COM Port 1 (Turquoise)
6. Gigabit LAN 1
7. Gigabit LAN 2
8. VGA Port (Blue)
9. SCSI (Channel B)

(*See Section 2-5 for details.)

## B. Front Control Panel

JF1 contains header pins for various buttons and indicators that are normally located on a control panel at the front of the chassis. These connectors are designed specifically for use with Supermicro server chassis. See Figure 2-4 for the descriptions of the various control panel buttons and LED indicators. Refer to the following section for descriptions and pin definitions.

**Figure 2-4. JF1 Header Pins**



## C. Front Control Panel Pin Definitions

### NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

| NMI Button Pin Definitions (JF1) | |
|---|---|
| Pin# | Definition |
| 19 | Control |
| 20 | Ground |

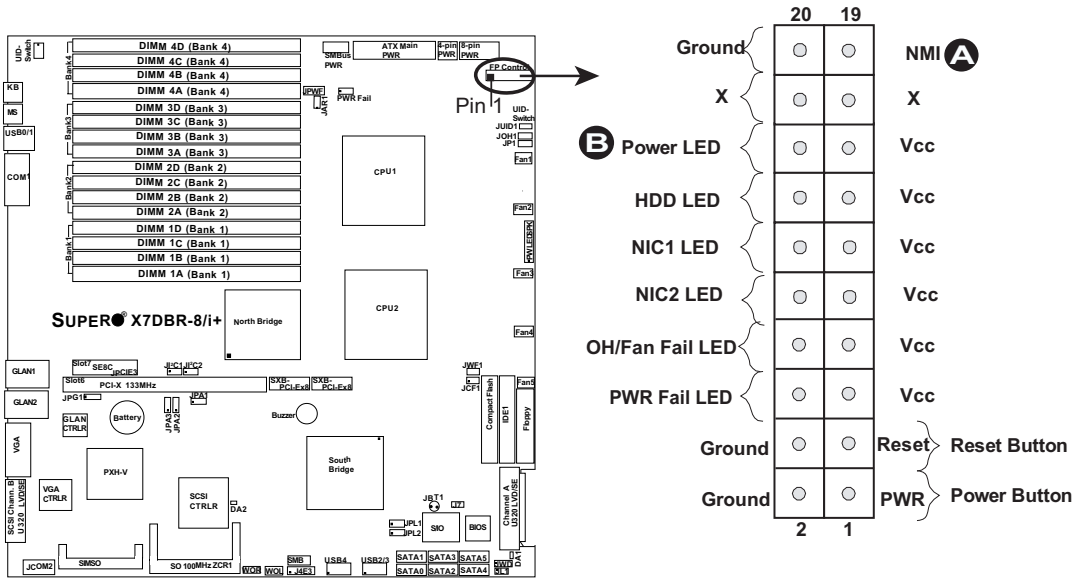
### Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

| Power LED Pin Definitions (JF1) | |
|---|---|
| Pin# | Definition |
| 15 | +5V |
| 16 | Ground |

A. NMI

B. PWR LED



## HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. Attach the hard drive LED cable here to display disk activity (for any hard drives on the system, including SAS, Serial ATA and IDE). See the table on the right for pin definitions.

| HDD LED Pin Definitions (JF1) | |
|---|---|
| Pin# | Definition |
| 13 | +5V |
| 14 | HD Active |

## NIC1/NIC2 LED Indicators

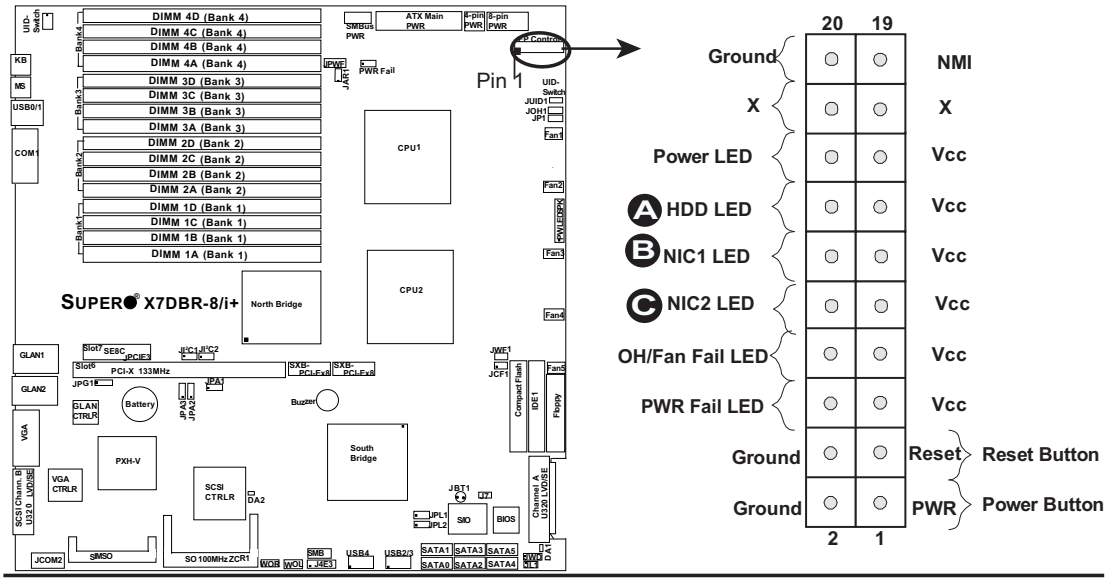
The NIC (Network Interface Controller) LED connection for GLAN port1 is located on pins 11 and 12 of JF1 and the LED connection for GLAN Port2 is on Pins 9 and 10. Attach the NIC LED cables to display network activity. Refer to the table on the right for pin definitions.

| GLAN1/2 LED Pin Definitions (JF1) | |
|---|---|
| Pin# | Definition |
| 9/11 | Vcc |
| 10/12 | PWR Fail |

A. HDD LED

B. NIC1 LED

C. NIC2 LED



## Overheat/Fan Fail LED (OH)

Connect an LED to the OH/Fan Fail connection on pins 7 and 8 of JF1 to provide advanced warning of chassis overheating or fan failure. Refer to the table on the right for pin definitions.

| OH/Fan Fail LED Pin Definitions (JF1) | |
|---|---|
| Pin# | Definition |
| 7 | Vcc |
| 8 | Ground |

| OH/Fan Fail Indicator Status | |
|---|---|
| State | Definition |
| Off | Normal |
| On | Overheat |
| Flash-ing | Fan Fail |

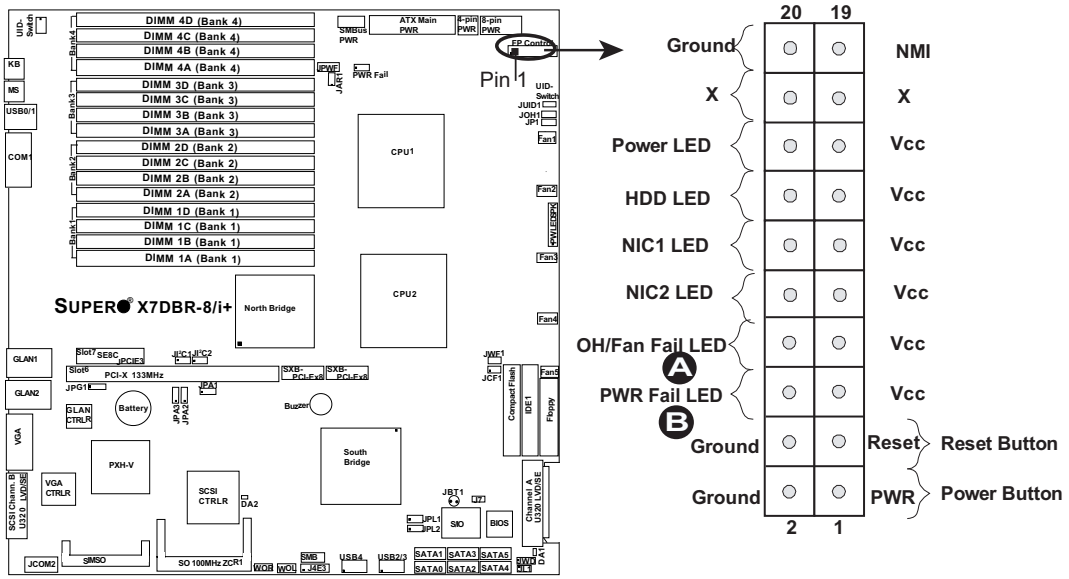
## Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

| PWR Fail LED Pin Definitions (JF1) | |
|---|---|
| Pin# | Definition |
| 5 | Vcc |
| 6 | Ground |

A. OH/Fan Fail LED

B. PWR Supply Fail



## Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to the hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

| Reset Button Pin Definitions (JF1) | |
|---|---|
| Pin# | Definition |
| 3 | Reset |
| 4 | Ground |

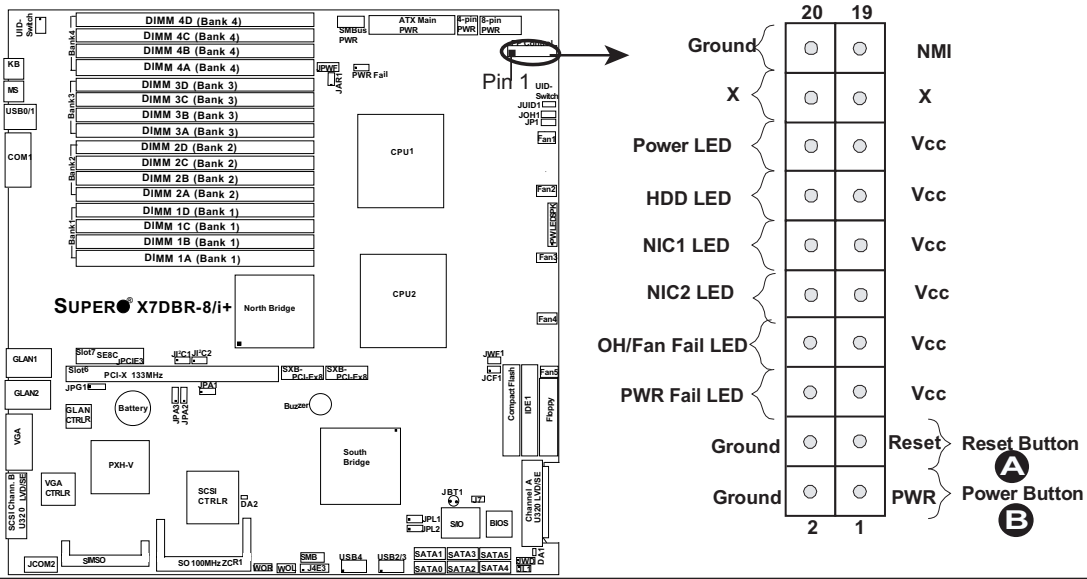
## Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in BIOS - see Chapter 4). To turn off the power when set to suspend mode, press the button for at least 4 seconds. Refer to the table on the right for pin definitions.

| Power Button Pin Definitions (JF1) | |
|---|---|
| Pin# | Definition |
| 1 | Signal |
| 2 | +3V Standby |

A. Reset Button

B. PWR Button



# 2-5 Connecting Cables

## ATX Power Connector

There are a 24-pin main power supply connector(JPW1) and an 8-pin CPU PWR connector (JPW3) on the motherboard. These power connectors meet the SSI EPS 12V specification. The 4-pin 12V PWR supply is required to provide adequate power to the system. See the table on the right for pin definitions for connector (JPW1). For the 8-pin PWR (JPW3), please refer to the item listed below.

**ATX Power 20-pin Connector Pin Definitions**

| Pin# | Definition | Pin # | Definition |
|---|---|---|---|
| 13 | +3.3V | 1 | +3.3V |
| 14 | -12V | 2 | +3.3V |
| 15 | COM | 3 | COM |
| 16 | PS_ON | 4 | +5V |
| 17 | COM | 5 | COM |
| 18 | COM | 6 | +5V |
| 19 | COM | 7 | COM |
| 20 | Res (NC) | 8 | PWR_OK |
| 21 | +5V | 9 | 5VSB |
| 22 | +5V | 10 | +12V |
| 23 | +5V | 11 | +12V |
| 24 | COM | 12 | +3.3V |

## Processor Power Connector

In addition to the Primary ATX power connector (above), the 12V 8-pin CPU PWR connector at JPW3 must also be connected to your power supply. See the table on the right for pin definitions.

Required Connection

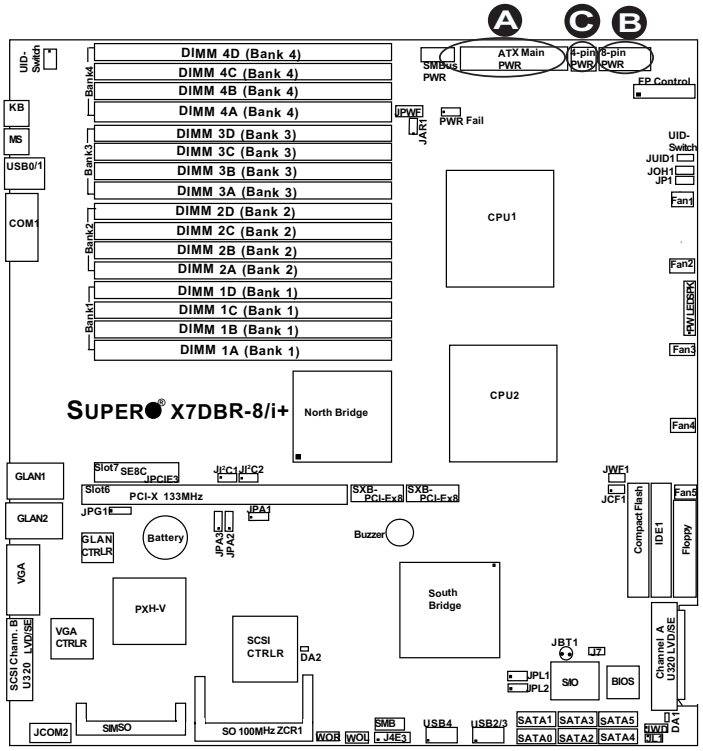
**12V 4-pin Power Connector Pin Definitions**

| Pins | Definition |
|---|---|
| 1 and 2 | Ground |
| 3 and 4 | +12V |

Required Connection

**12V 8-pin Power CPU Connector Pin Definitions**

| Pins | Definition |
|---|---|
| 1 through 4 | Ground |
| 5 through 8 | +12V |




A. 24-pin ATX PWR

B. 8-pin Processor PWR

C. 4-pin PWR

## Universal Serial Bus (USB)

There are five USB 2.0 (Universal Serial Bus) ports/headers on the motherboard. Two of them are Back Panel USB ports (USB#0/1:JUSB1), and the other are Front Panel USB headers (USB#2/3:JUSB2, USB#4: JUSB3). See the tables on the right for pin definitions.

**Back Panel USB (USB0/1)**

| Pin# | Definitions |
|---|---|
| 1 | +5V |
| 2 | PO- |
| 3 | PO+ |
| 4 | Ground |
| 5 | N/A |

**Front Panel USB (USB2/3)**

| Pin# | Definition |
|---|---|
| 1 | Vcc |
| 2 | Data- |
| 3 | Data+ |
| 4 | Ground |
| 5 | NA |

**Front Panel USB (USB4)**

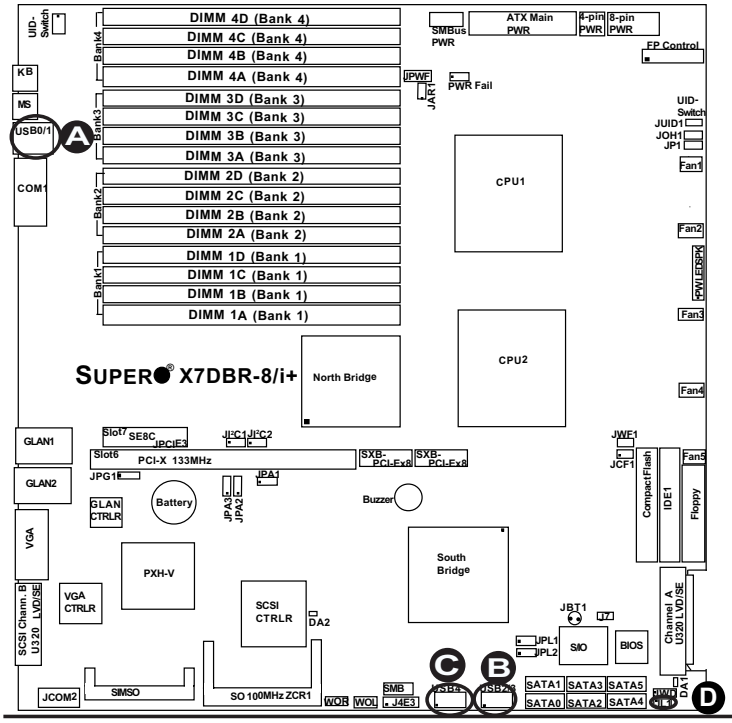
| Pin# | Definitions |
|---|---|
| 1 | +5V |
| 2 | PO- |
| 3 | PO+ |
| 4 | Ground |
| 5 | Key |

## Chassis Intrusion

A Chassis Intrusion header is located at JL1. Attach the appropriate cable from the chassis to inform you of a chassis intrusion when the chassis is opened.

**Chassis Intrusion Pin Definitions (JL1)**

| Pin# | Definition |
|---|---|
| 1 | Intrusion Input |
| 2 | Ground |

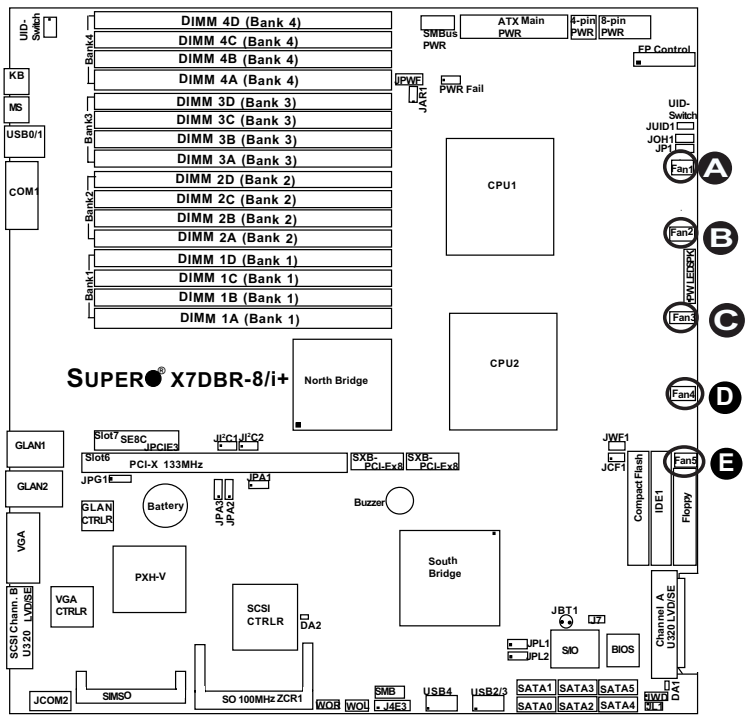



A. Backpanel USB 0-1
B. Front Panel USB 2-3
C. Front Panel USB 4
D. Chassis Intrusion

## Fan Headers

The X7DBR-8+/X7DBR-i+ has five chassis/system fan headers (Fan1 to Fan5.) See the table on the right for pin definitions. (*The onboard fan speeds are controlled by Thermal Management via BIOS Hardware Monitor in the Advanced Setting. Note: Default: Disabled.)

| Fan Header Pin Definitions | |
|---|---|
| Pin# | Definition |
| 1 | Ground |
| 2 | +12V |
| 3 | Tachometer |




A. Fan 1
B. Fan 2
C. Fan 3
D. Fan 4
E. Fan 5

## ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse ports are located at JKM and JMS. See the table on the right for pin definitions. (The mouse port is above the keyboard port. See the table on the right for pin definitions.)

**PS/2 Keyboard and Mouse Port Pin Definitions**

| Pin# | Definition |
|---|---|
| 1 | Data |
| 2 | NC |
| 3 | Ground |
| 4 | VCC |
| 5 | Clock |
| 6 | NC |

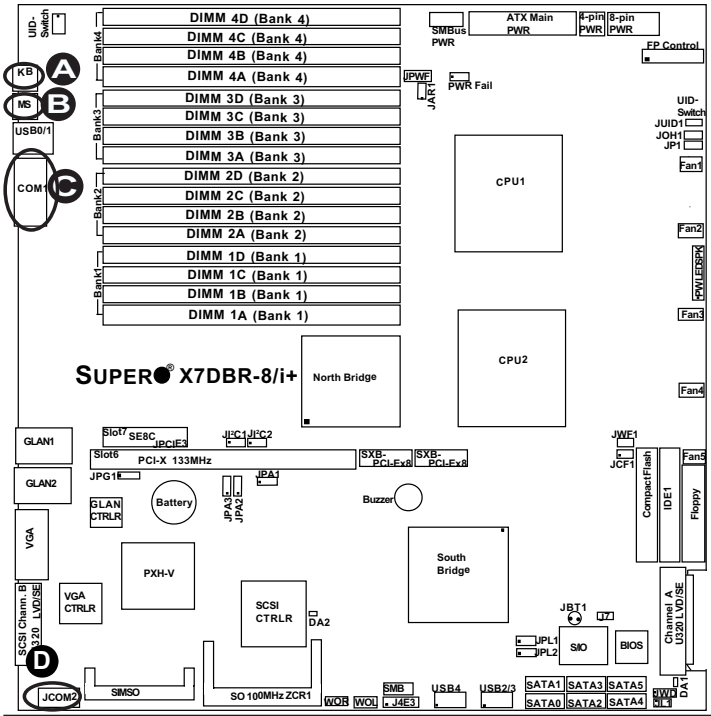
## Serial Ports

COM1 is a connector located on the IO Backpanel and COM2 is a header located at JCOM2. See the table on the right for pin definitions.

**Serial Port Pin Definitions (COM1/COM2)**

| Pin # | Definition | Pin # | Definition |
|---|---|---|---|
| 1 | CD | 6 | DSR |
| 2 | RD | 7 | RTS |
| 3 | TD | 8 | CTS |
| 4 | DTR | 9 | RI |
| 5 | Ground | 10 | NC |

(Pin 10 is available on COM2 only. NC: No Connection.)




A. Keyboard
B. Mouse
C. COM1
D. COM2

## Wake-On-Ring

The Wake-On-Ring header is designated JWOR. This function allows your computer to receive and be "woken up" by an incoming call to the modem when the system is in suspend state. See the table on the right for pin definitions. You must have a Wake-On-Ring card and cable to use this feature.

**Wake-On-Ring Pin Definitions**

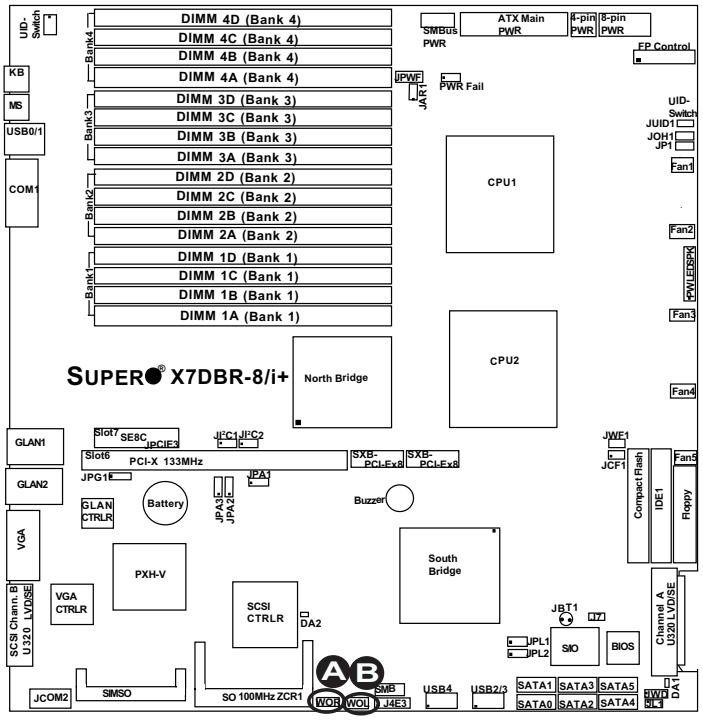
| Pin# | Definition |
|---|---|
| 1 | Ground |
| 2 | Wake-up |

## Wake-On-LAN

The Wake-On-LAN header is located at JWOL1 on the motherboard. See the table on the right for pin definitions. (You must also have a LAN card with a Wake-On-LAN connector and cable to use this feature.)

**Wake-On-LAN Pin Definitions**

| Pin# | Definition |
|---|---|
| 1 | +5V Standby |
| 2 | Ground |
| 3 | Wake-up |




A. WOR

B. WOL

## GLAN 1/2 (Giga-bit Ethernet Ports)

Two G-bit Ethernet ports are designated JLAN1 and JLAN2 on the IO backplane. This port accepts RJ45 type cables.

GLAN1 GLAN2

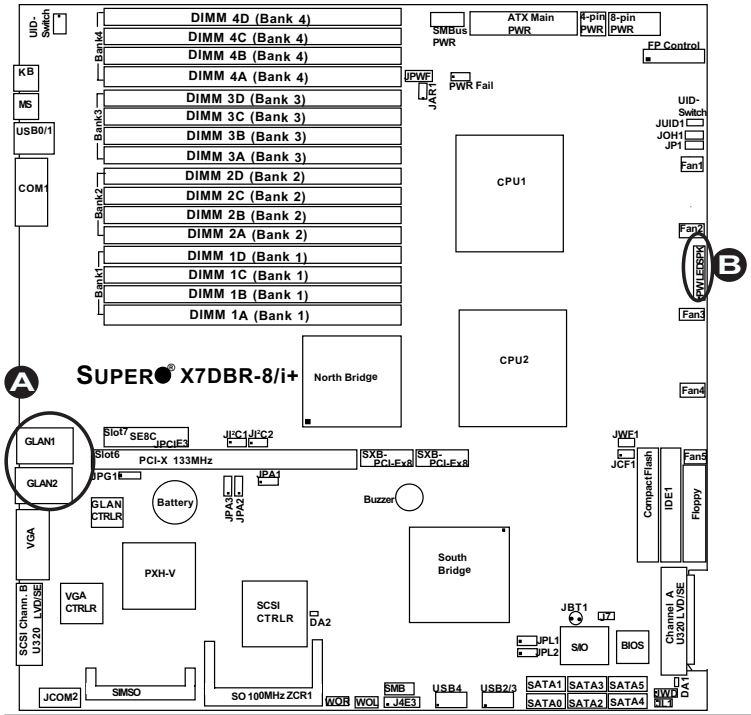
## Power LED/Speaker

On the JD1 header, pins 1-3 are for a power LED and pins 4-7 are for the speaker.. See the table on the right for speaker pin definitions. Note: The speaker connector pins are for use with an external speaker. If you wish to use the onboard speaker, you should close pins 6-7 with a jumper.

| Speaker Connector | |
|---|---|
| Pin Setting | Definition |
| Pins 6-7 | Internal Speaker |
| Pins 4-7 | External Speaker |

A. GLAN1/2

B. PWR LED/Speaker



## Power Fault (PWR Supply Failure)

Connect a cable from your power supply to the Power Failure header (JPWF) to provide warnings of power supply failure. This warning signal is passed through the PWR_LED pin to indicate of a power failure on the chassis. See the table on the right for pin definitions.

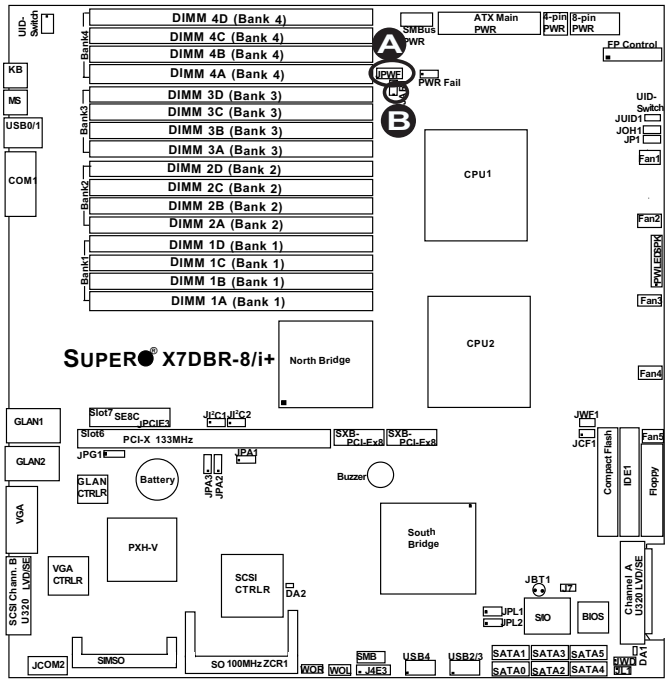
| PWR Supply Fail LED Pin Definitions | |
|---|---|
| Pin# | Definition |
| 1 | PWR 1: Fail |
| 2 | PWR 2: Fail |
| 3 | PWR 3: Fail |
| 4 | Signal: Alarm Reset |

**Note:** This feature is only available when using Supermicro redundant power supplies.

## Alarm Reset

If three power supplies are installed and Alarm Reset (JAR1) is enabled, the system will notify you when any of the three power modules fails. Connect JAR1 to a micro-switch to enable you to turn off the alarm that is activated when a power module fails. See the table on the right for pin definitions.

| Alarm Reset | |
|---|---|
| Pin Setting | Definition |
| Pin 1 | Ground |
| Pin 2 | +5V |




A. Power Fault

B. Alarm Reset

## Overheat LED/Fan Fail (JOH1)

The JOH1 header is used to connect an LED to provide warnings of chassis overheating. This LED will blink to indicate a fan failure. Refer to the table on right for pin definitions.

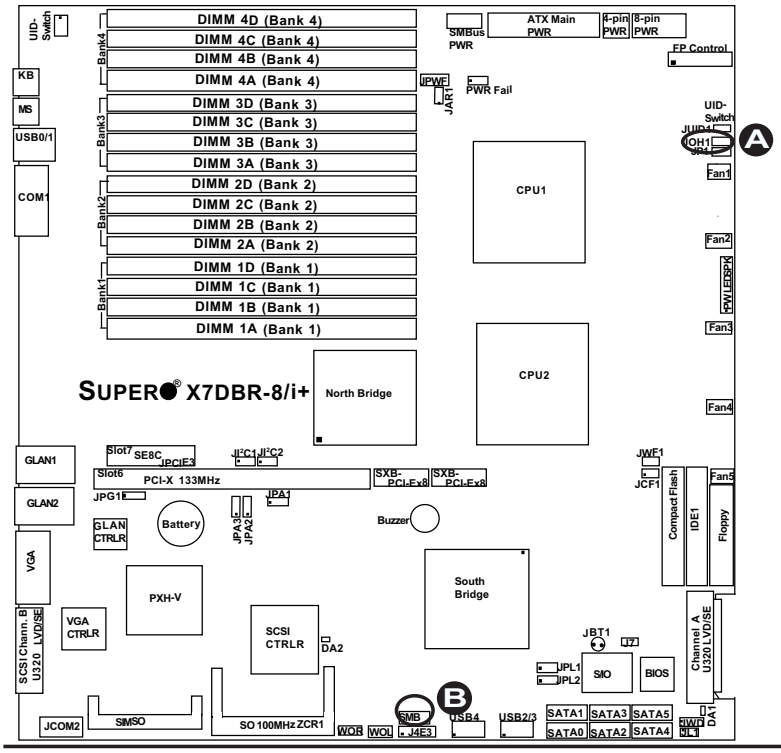
| Overheat LED Pin Definitions | |
|---|---|
| Pin# | Definition |
| 1 | 5vDC |
| 2 | OH Active |

| OH/Fan Fail LED | |
|---|---|
| State | Message |
| Solid | Overheat |
| Blinking | Fan Fail |

## SMB

A System Management Bus header is located at J18. Connect the appropriate cable here to utilize SMB on your system.

| SMB Header Pin Definitions | |
|---|---|
| Pin# | Definition |
| 1 | Data |
| 2 | Ground |
| 3 | Clock |
| 4 | No Connection |




A. OH/Fan Fail LED

B. SMB Header

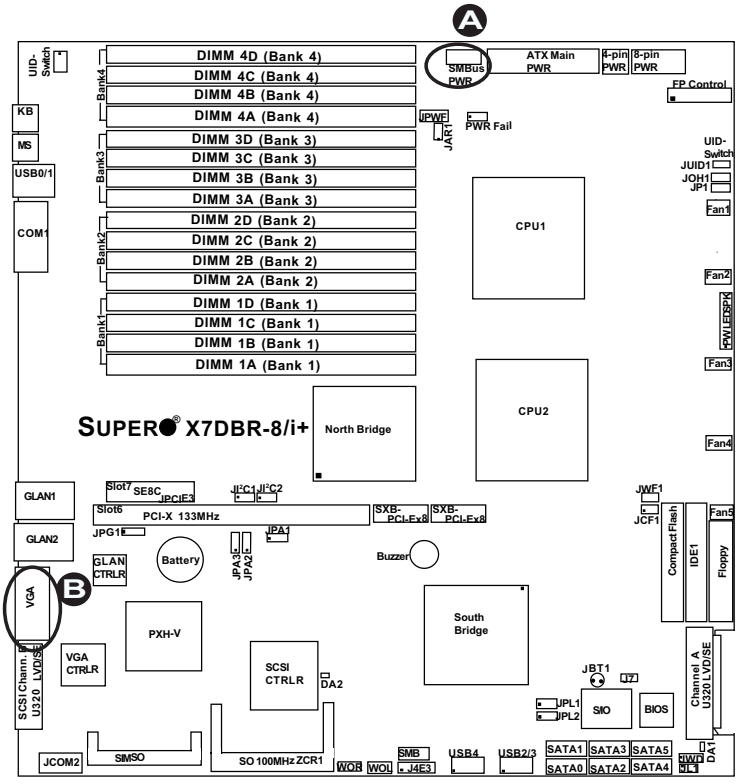
## Power SMB (I² C) Connector

Power SMB (I² C) Connector (J17) monitors the status of PWR Supply, Fan and system temperature. See the table on the right for pin definitions.

| PWR SMB Pin Definitions | |
|---|---|
| Pin# | Definition |
| 1 | Clock |
| 2 | Data |
| 3 | PWR Fail |
| 4 | Ground |
| 5 | +3.3V |

## VGA Connector

A VGA connector (J15) is located next to the GLAN2 port on the IO backplane. Refer to the board layout below for the location.




A. PWR SMB

B. VGA

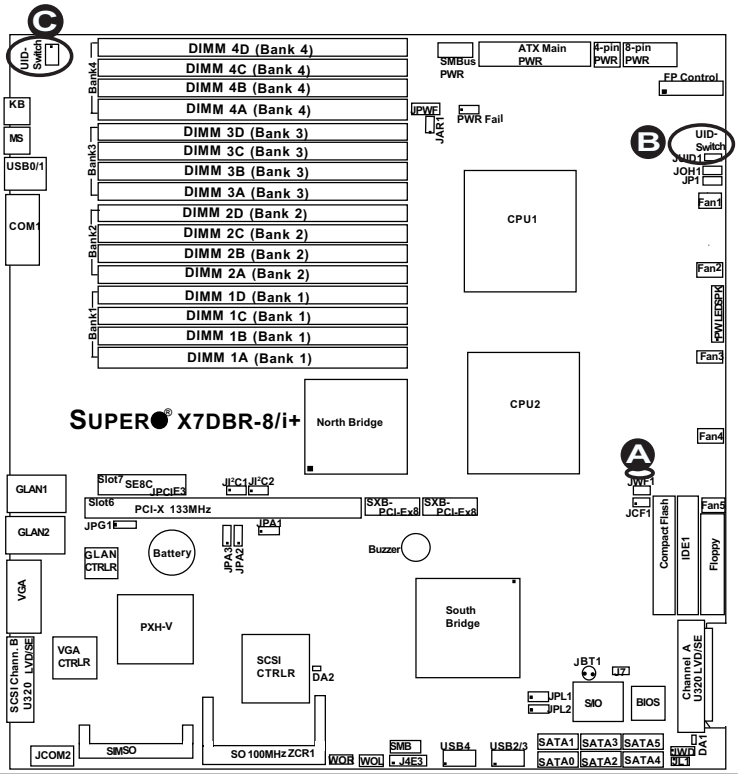
## Compact Flash Card PWR Connector

A Compact Flash Card Power Connector is located at JWFR. For the Compact Flash Card or the Compact Flash Jumper (JCF1) to work properly, you will need to connect a power cable to JWFR first. Refer to the board layout below for the location.

| Compact Flash Card PWR Connector | |
|---|---|
| Jumper | Definition |
| On | Power On |
| Off | Power Off |

## Unit Identification Switches

There are two Unit Identification (UID) Switches on the motherboard. The Front Panel UID Switch (JUID1) is connected to the Front Control Panel. The Back Panel (BP) UID Switch (JUID2) is located next to DIMM#4D. When you push the UID Switch (JUID1) on the Front Control Panel, both BP UID and FP UID Indicators will be lit. Push the UID Switch again to turn off both Indicators. These UID Indicators provide easy identification of a system unit that may be in need of service.



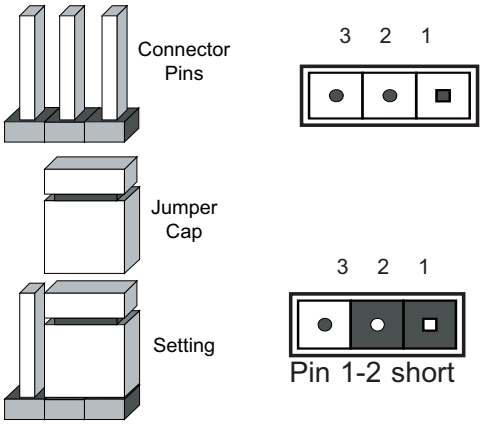

A. Compact Flash PWR Connector
B. Front Panel UID Switch (JUID1)
C. Back Panel UID Switch (JUID2)

# 2-6 Jumper Settings

## Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.

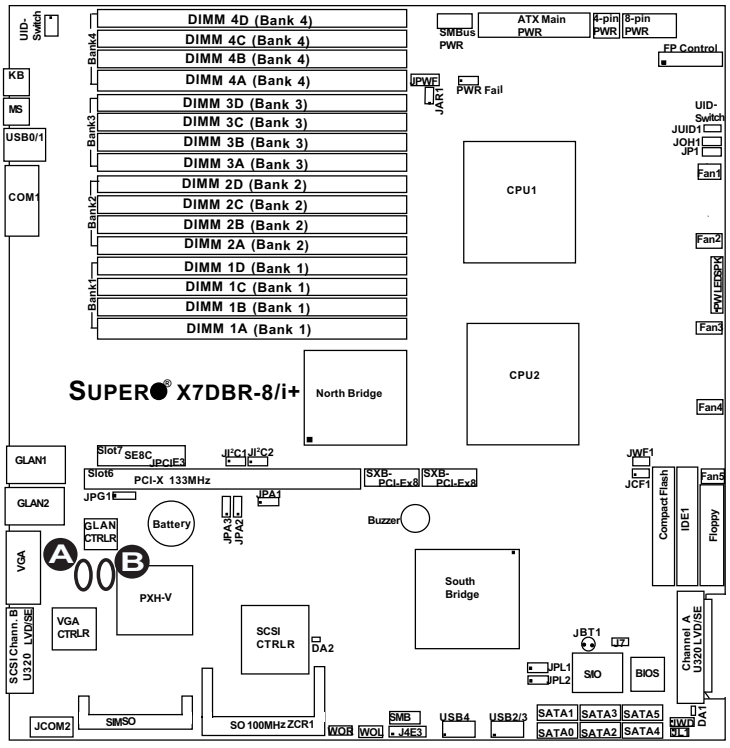
**Note:** On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.




## GLAN Enable/Disable

JPL1/JPL2 enable or disable the GLAN Port1/GLAN Port2 on the motherboard. See the table on the right for jumper settings. The default setting is enabled.

| GLAN Enable | |
|---|---|
| Pin# | Definition |
| 1-2 | Enabled (*default) |
| 2-3 | Disabled |




A. GLAN Port1 Enable

B. GLAN Port2 Enable

## CMOS Clear

JBT1 is used to clear CMOS. Instead of pins, this "jumper" consists of contact pads to prevent the accidental clearing of CMOS. To clear CMOS, use a metal object such as a small screwdriver to touch both pads at the same time to short the connection. Always remove the AC power cord from the system before clearing CMOS. **Note:** For an ATX power supply, you must completely shut down the system, remove the AC power cord and then short JBT1 to clear CMOS.

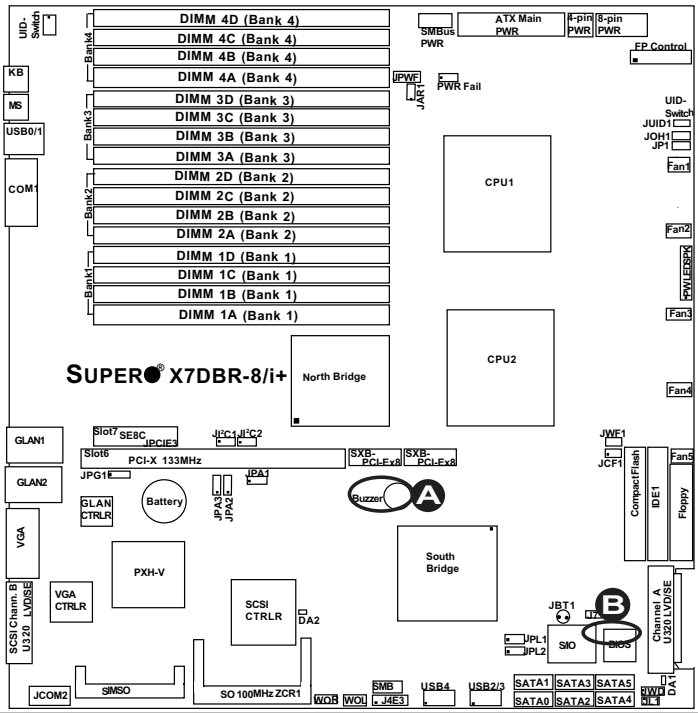
## Watch Dog Enable/Disable

JWD controls the Watch Dog function. Watch Dog is a system monitor that can reboot the system when a software application hangs. Pins 1-2 will cause WD to reset the system if an application hangs. Pins 2-3 will generate a non-maskable interrupt signal for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in BIOS.

| Watch Dog Jumper Settings (JWD) | |
|---|---|
| Jumper Setting | Definition |
| Pins 1-2 | Reset (*default) |
| Pins 2-3 | NMI |
| Open | Disabled |

A. Clear CMOS

B. Watch Dog Enable



## SCSI Controller Enable/ Disable

Jumper JPA1 is used to enable or disable the Adaptec SCSI controller. The default setting is on pins 1-2 to enable SCSI. See the table on the right for jumper settings.

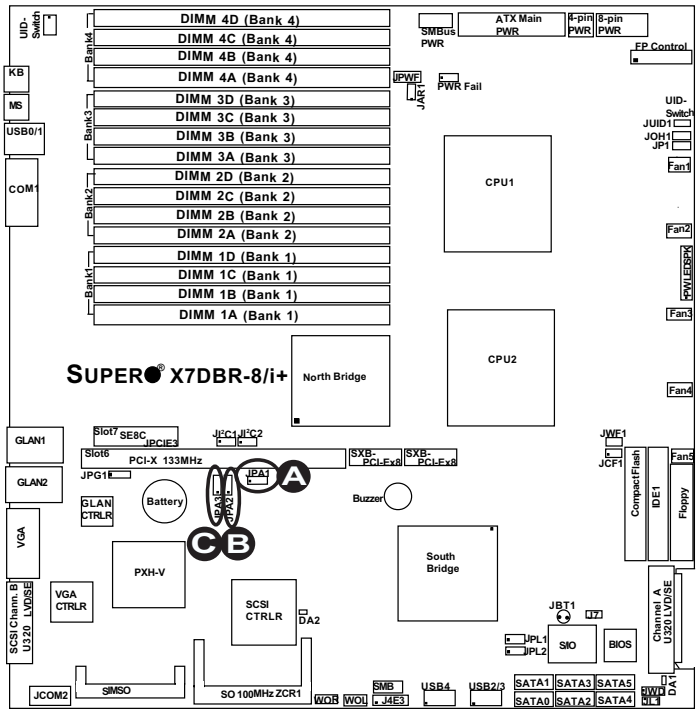
| SCSI Enable/Disable Jumper Settings | |
|---|---|
| Jumper Setting | Definition |
| *Pins 1-2 (Default) | Enabled |
| Pins 2-3 | Disabled |

## SCSI Termination Enable/ Disable

Jumpers JPA2/JPA3 are used to enable or disable termination for SCSI Channel A (JPA2) and Channel B (JPA3) connectors. The default setting is open to enable termination. See the table on the right for jumper settings.

*__Note:__ In order for the SCSI drives to function properly, please do not change the default setting (enabled) set by the manufacturer.

| SCSI Term. Enable/Disable Jumper Settings | |
|---|---|
| Jumper Setting | Definition |
| *Open (default) | Enabled |
| Closed | Disabled |




A. SCSI Enable
B. SCSI Channel A Termination Enable
C. SCSI Channel B Termination Enable

## 3rd PWR Supply PWR Fault Detect (J3P)

The system can notify you in the event of a power supply failure. This feature available when three power supply units are installed in the chassis with one acting as a backup. If you only have one or two power supply units installed, you should disable this (the default setting) with J3P to prevent false alarms.

| 3rd PWR Supply PWR Fault Jumper Settings | |
|---|---|
| Jumper Setting | Definition |
| Closed | Enabled |
| Open | Disabled (*Default) |

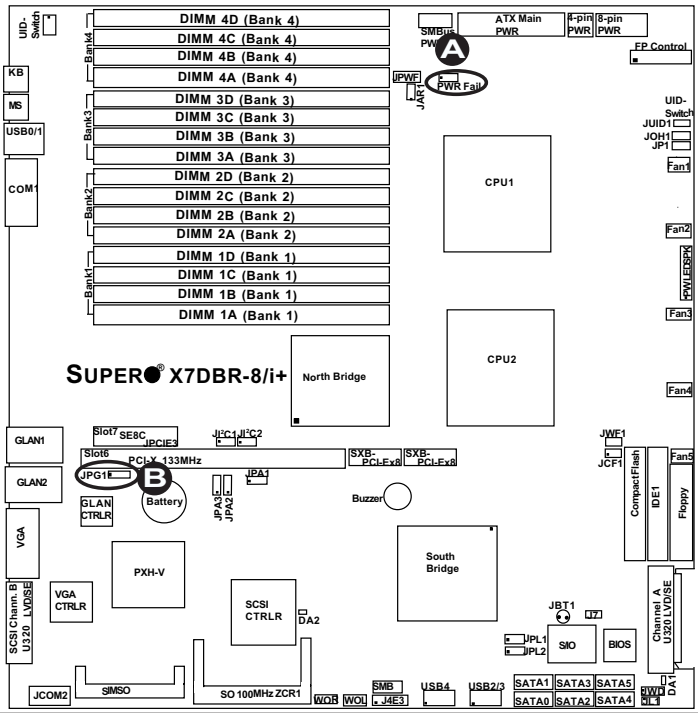
## VGA Enable/Disable

JPG1 allows you to enable or disable the VGA port. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

| VGA Enable/Disable Jumper Settings | |
|---|---|
| Both Jumpers | Definition |
| *Pins 1-2 | Enabled |
| Pins 2-3 | Disabled |

A. 3rd PWR Fail

B. VGA Enabled



## I²C Bus to PCI Slots 1/2

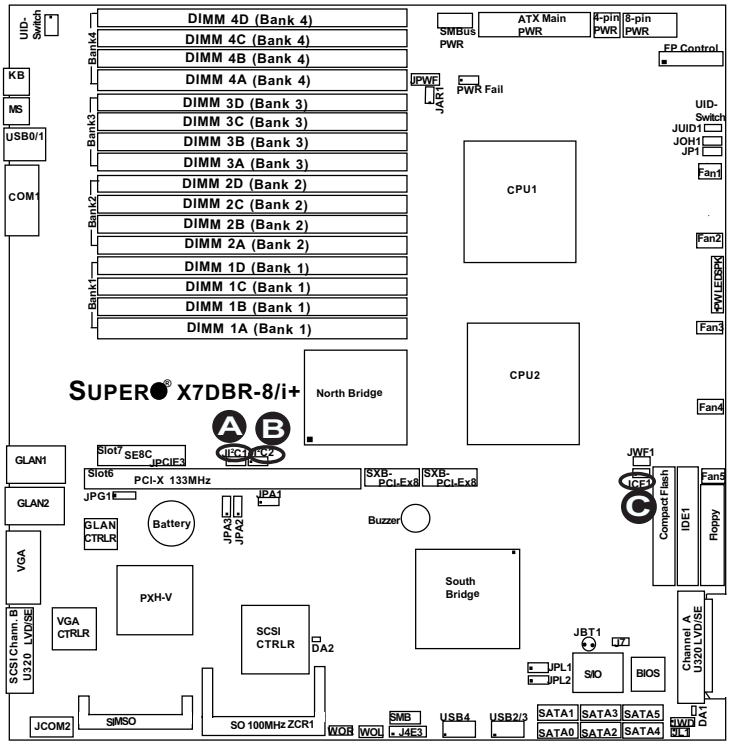
JI²C1/JI²C2 allow you to enable I²C Bus to PCI-X/PCI-E slots. See the table on the right for jumper settings. The default setting is Disabled.

| I²C Bus to PCI Slots Jumper Settings | |
|---|---|
| Jumper | Definition |
| 1-2 | Enabled |
| Off | Disabled (Default) |

## Compact Flash Master/Slave Select

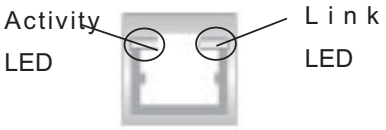
A Compact Flash Master (Primary)/Slave (Secondary) Select Jumper is located at JCF1. Close this jumper to enable Compact Flash Card. For the Compact Flash Card or the Compact Flash Jumper (JCF1) to work properly, you will need to connect the Compact Flash Card power cable to JWF1 first. Refer to the board layout below for the location.

| Compact Flash Card Master/ Slave Select | |
|---|---|
| Jumper | Definition |
| Open | Slave (Secondary) |
| Closed | Master (Primary) |




A. JI²C1
B. JI²C2
C. Compact Flash Master/ Slave Select

# 2-7 Onboard Indicators

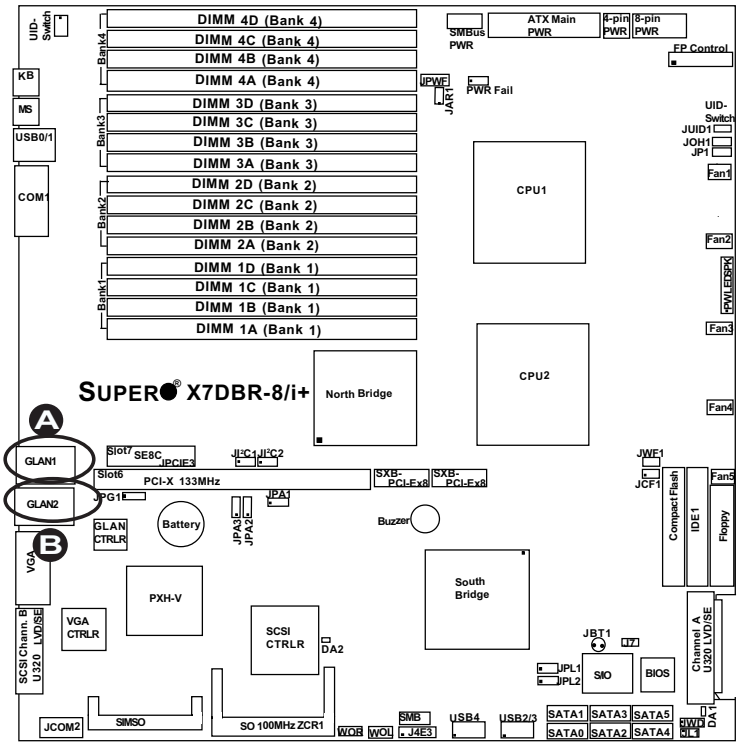



## GLAN LEDs

There are two GLAN ports on the motherboard. Each Gigabit Ethernet LAN port has two LEDs. The green LED indicates activity, while the other LED may be green, amber or off to indicate the speed of the connection. See the tables at right for more information.

| GLAN Activity Indicator | |
|---|---|
| LED Color | Definition |
| Off | No Activity or 10 Mbps |
| Blinking | Active |

| GLAN Link (Speed) Indicator | |
|---|---|
| LED Color | Definition |
| Off | No Connection or 10 Mbps |
| Green | 100 Mbps |
| Amber | 1 Gbps |

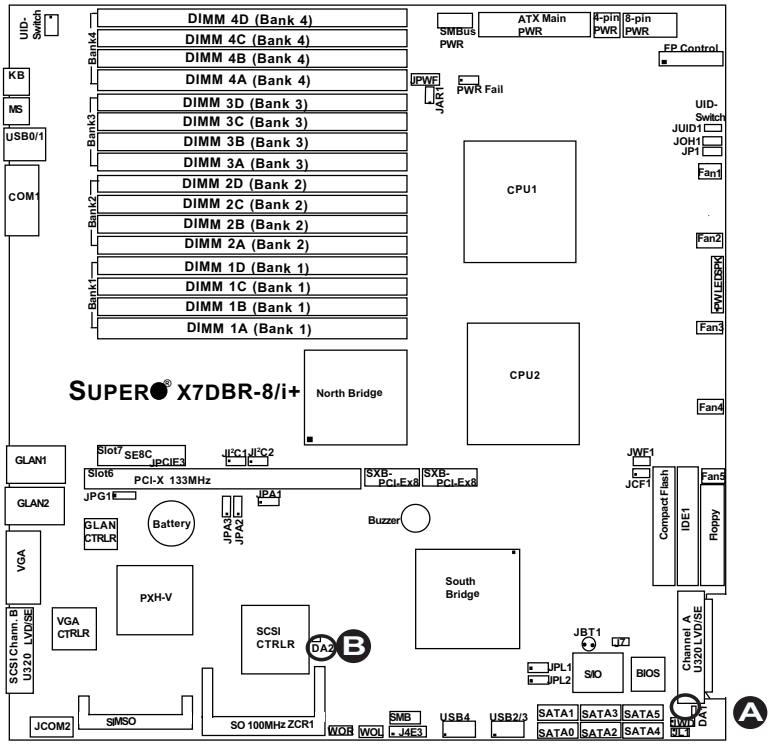



A. GLAN Port1 LEDs

B. GLAN Port2 LEDs

## Onboard SCSI Activity LED Indicators (*X7DBR-8+ only)

There are two Onboard SCSI Activity LED indicators on the X7DBR-8+. DA1 indicates the activity status of SCSI Channel A and DA2 indicates the activity status of Channel B.




A. SCSI Channel A Activity LED

B. SCSI Channel B Activity LED

# 2-8 Floppy Drive, Hard Disk Drive, SIMSO-DIMM IPMI, Zero Channel RAID Card and SCSI Connections

Note the following when connecting the floppy and hard disk drive cables:

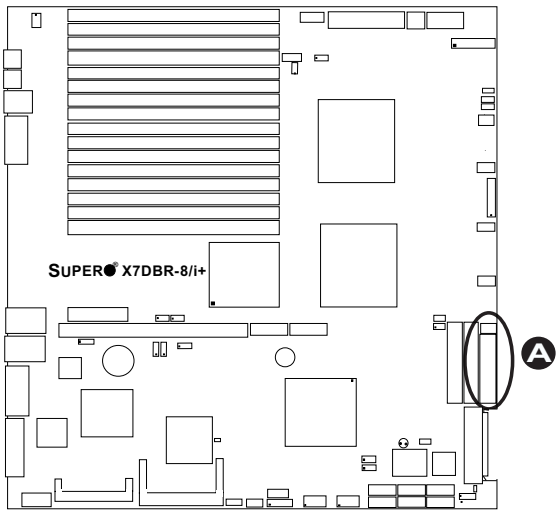
- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

## Floppy Connector

The floppy connector is located at J22. See the table below for pin definitions.

**Floppy Drive Connector Pin Definitions (Floppy)**

| Pin# | Definition | Pin # | Definition |
|---|---|---|---|
| 1 | Ground | 2 | FDHDIN |
| 3 | Ground | 4 | Reserved |
| 5 | Key | 6 | FDEDIN |
| 7 | Ground | 8 | Index |
| 9 | Ground | 10 | Motor Enable |
| 11 | Ground | 12 | Drive Select B |
| 13 | Ground | 14 | Drive Select B |
| 15 | Ground | 16 | Motor Enable |
| 17 | Ground | 18 | DIR |
| 19 | Ground | 20 | STEP |
| 21 | Ground | 22 | Write Data |
| 23 | Ground | 24 | Write Gate |
| 25 | Ground | 26 | Track 00 |
| 27 | Ground | 28 | Write Protect |
| 29 | Ground | 30 | Read Data |
| 31 | Ground | 32 | Side 1 Select |
| 33 | Ground | 34 | Diskette |



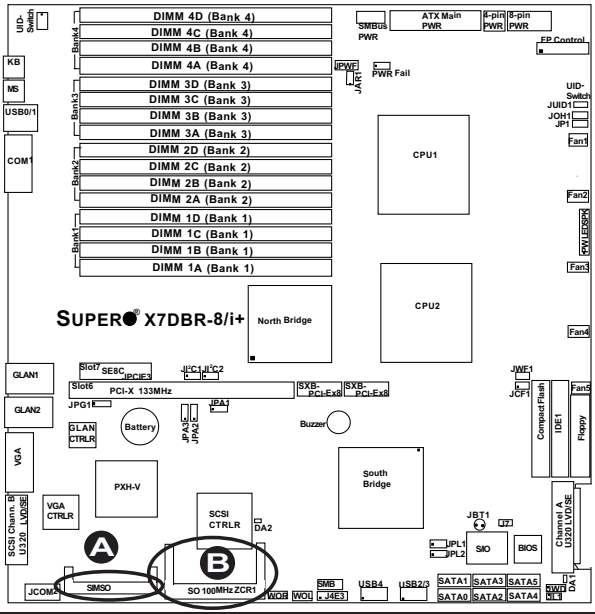

A. Floppy Port

### SIMSO Slot

There is a SIM SO-DIMM IPMI Slot on the motherboard. Refer to the layout below for the location of SIMSO slot.

### Zero Channel RAID Card Slot

There is a Zero Channel RAID Card Slot on the motherboard. Refer to the layout below for the location of the ZCR card socket.




A. SIMSO Slot

B. SOZCR1 Socket

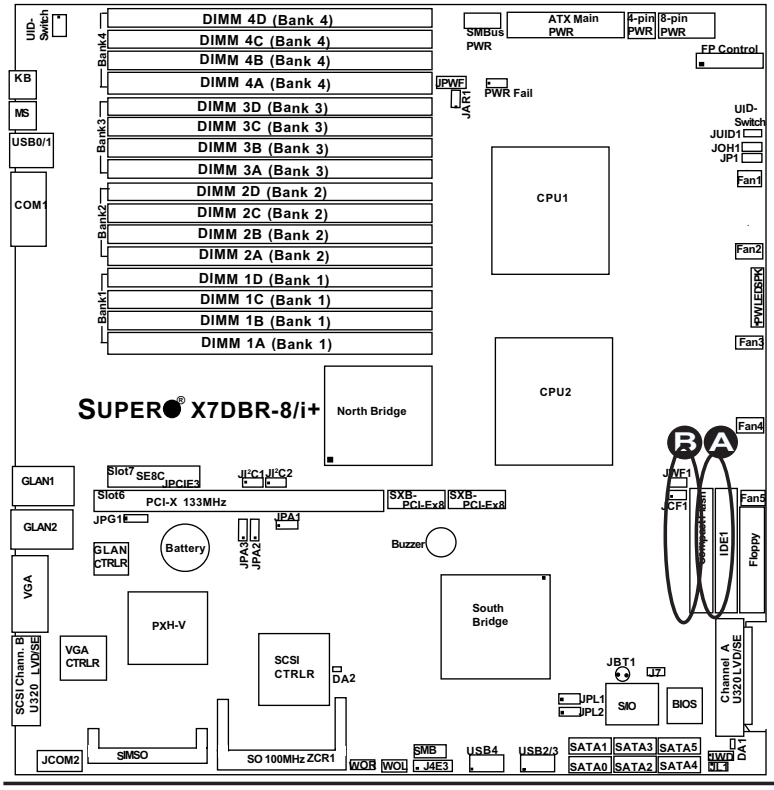
## IDE Connectors

There are two IDE Connectors (JIDE1: Blue, JIDE2: White) on the motherboard. The blue IDE connector (JIDE1) is designated as the Primary IDE Drive. The white IDE connector (JIDE2) is designated as the Secondary IDE Drive, reserved for Compact Flash Card use only. (See the note below.) See the table on the right for pin definitions.

*Note: JIDE2 (the white slot) is reserved for Compact Flash Card only. Do not use it for other devices. If JIDE2 is populated with a Compact Flash Card, JIDE1 (the blue slot) will be available for one device only. For the Compact Flash Card to work properly, you will need to connect a power cable to JWF1 first.

**IDE Drive Connectors Pin Definitions**

| Pin# | Definition | Pin # | Definition |
|---|---|---|---|
| 1 | Reset IDE | 2 | Ground |
| 3 | Host Data 7 | 4 | Host Data 8 |
| 5 | Host Data 6 | 6 | Host Data 9 |
| 7 | Host Data 5 | 8 | Host Data 10 |
| 9 | Host Data 4 | 10 | Host Data 11 |
| 11 | Host Data 3 | 12 | Host Data 12 |
| 13 | Host Data 2 | 14 | Host Data 13 |
| 15 | Host Data 1 | 16 | Host Data 14 |
| 17 | Host Data 0 | 18 | Host Data 15 |
| 19 | Ground | 20 | Key |
| 21 | DRQ3 | 22 | Ground |
| 23 | I/O Write | 24 | Ground |
| 25 | I/O Read | 26 | Ground |
| 27 | IOCHRDY | 28 | BALE |
| 29 | DACK3 | 30 | Ground |
| 31 | IRQ14 | 32 | IOCS16 |
| 33 | Addr1 | 34 | Ground |
| 35 | Addr0 | 36 | Addr2 |
| 37 | Chip Select 0 | 38 | Chip Select 1 |
| 39 | Activity | 40 | Ground |




A. IDE#1

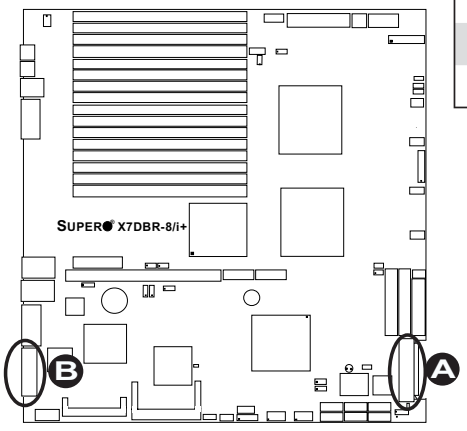
B. Compact Flash Card

## Ultra 320 SCSI Connectors (*X7DBR-8+ only)

There are two SCSI connectors on the motherboard. SCSI Channel A is located at JA1, and SCSI Channel B is located at JA2. Refer to the table below for the pin definitions of the Ultra 320 SCSI connectors located at JA1 and JA2.

A. SCSI Channel A

B. SCSI Channel B




**Ultra320 SCSI Drive Connector Pin Definitions (J28)**

| Pin# | Definition | Pin # | Definition |
|---|---|---|---|
| 1 | +DB (12) | 35 | -DB (12) |
| 2 | +DB (13) | 36 | -DB (13) |
| 3 | +DB (14) | 37 | -DB (14) |
| 4 | +DB (15) | 38 | -DB (15) |
| 5 | +DB (P1) | 39 | -DB (P1) |
| 6 | +DB (0) | 40 | -DB (0) |
| 7 | +DB (1) | 41 | -DB (1) |
| 8 | +DB (2) | 42 | -DB (2) |
| 9 | +DB (3) | 43 | -DB (3) |
| 10 | +DB (4) | 44 | -DB (4) |
| 11 | +DB (5) | 45 | -DB (5) |
| 12 | +DB (6) | 46 | -DB (6) |
| 13 | +DB (7) | 47 | -DB (7) |
| 14 | +DB (P) | 48 | -DB (P) |
| 15 | Ground | 49 | Ground |
| 16 | DIFFSENS | 50 | Ground |
| 17 | TERMPWR | 51 | TERMPWR |
| 18 | TERMPWR | 52 | TERMPWR |
| 19 | Reserved | 53 | Reserved |
| 20 | Ground | 54 | Ground |
| 21 | +ATN | 55 | -ATN |
| 22 | Ground | 56 | Ground |
| 23 | +BSY | 57 | -BSY |
| 24 | +ACK | 58 | -ACK |
| 25 | +RST | 59 | -RST |
| 26 | +MSG | 60 | -MSG |
| 27 | +SEL | 61 | -SEL |
| 28 | +C/D | 62 | -C/D |
| 29 | +REQ | 63 | -REQ |
| 30 | +I/O | 64 | -I/O |
| 31 | +DB (8) | 65 | -DB (8) |
| 32 | +DB (9) | 66 | -DB (9) |
| 33 | +DB (10) | 67 | -DB (10) |
| 34 | +DB (11) | 68 | -DB (11) |

# Chapter 3
# Troubleshooting

## 3-1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the 'Technical Support Procedures' and/or 'Returning Merchandise for Service' section(s) in this chapter.
**Note: Always disconnect the power cord before adding, changing or installing any hardware components.**

### Before Power On

1. Make sure that there are no short circuits between the motherboard and chassis.
2. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse.
3. Remove all add-on cards.
4. Install one CPU (making sure it is fully seated) and connect the chassis speaker and the power LED to the motherboard. (Check all jumper settings as well.)
5. Use only the correct type of CMOS onboard battery as recommended by the Manufacturer. Do not install the onboard battery upside down to avoid possible explosion.

### No Power

1. Make sure that there are no short circuits between the motherboard and chassis.
2. Verify that all jumpers are set to their default positions.
3. Check that the 115V/230V switch on the power supply is properly set.
4. Turn the power switch on and off to test the system.
5. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.

### No Video

1. If the power is on but you have no video, remove all the add-on cards and memory modules.
2. Use the speaker to determine if any beep codes exist. Refer to the Appendix for details on beep codes.

### Losing the System's Setup Configuration

1. Ensure that you are using a high quality power supply. A poor quality power supply may cause the system to lose the CMOS setup information. Refer to

Section 1-6 for details on recommended power supplies.

2. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.

3. If the above steps do not fix the Setup Configuration problem, contact your vendor for repairs.

***NOTE***

If you are a system integrator, VAR or OEM, a POST diagnostics card is recommended. For I/O port 80h codes, refer to App. B.

### Memory Errors

1. Make sure the DIMM modules are properly and fully installed.
2. Determine if different speeds of DIMMs have been installed and verify that the BIOS setup is configured for the fastest speed of RAM used. It is recommended to use the same RAM speed for all DIMMs in the system.
3. Make sure you are using the correct type of DDR2 FBD (Fully Buffered) ECC 533/667 SDRAM (*recommended by the manufacturer.)
4. Check for bad DIMM modules or slots by swapping a single module between four slots and noting the results.
5. Make sure all memory modules are fully seated in their slots. To install memory modules, begin with Branch 1, then Branch 2, and so on (see Page 2-6).

## 3-2 Technical Support Procedures

Before contacting Technical Support, please take the following steps. Also, note that as a motherboard manufacturer, Super Micro does not sell directly to end-users, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problem(s) with the specific system configuration that was sold to you.

1. Please go through the 'Troubleshooting Procedures' and 'Frequently Asked Question' (FAQ) sections in this chapter or see the FAQs on our web site (http://www.supermicro.com/support/faqs/) before contacting Technical Support.
2. BIOS upgrades can be downloaded from our web site at (http://www.supermicro.com/support/bios/)

***Note: Not all BIOS can be flashed depending on the modifications to the boot block code.***

3. If you still cannot resolve the problem, include the following information when contacting Super Micro for technical support:

   •Motherboard model and PCB revision number

   •BIOS release date/version (this can be seen on the initial display when your system first boots up)

   •System configuration

   An example of a Technical Support form is on our web site at (http://www.supermicro.com/support/contact.cfm).

4. Distributors: For immediate assistance, please have your account number ready when placing a call to our technical support department. We can be reached by e-mail at support@supermicro.com or by fax at: (408) 503-8000, option 2.

## 3-3 Frequently Asked Questions

**Question: What are the various types of memory that my motherboard can support?**

**Answer:** The X7DBR-8+/X7DBR-i+ has sixteen 240-pin DIMM slots that support DDR2 FBD ECC 533/667 SDRAM modules. It is strongly recommended that you do not mix memory modules of different speeds and sizes.

**Question: How do I update my BIOS?**

**Answer:** It is recommended that you **do not** upgrade your BIOS if you are experiencing no problems with your system. Updated BIOS files are located on our web site at http://www.supermicro.com/support/bios/. Please check our BIOS warning message and the info on how to update your BIOS on our web site. Also, check the current BIOS revision and make sure it is newer than your BIOS before downloading. Select your motherboard model and download the BIOS file to your computer. Unzip the BIOS files onto a bootable floppy and reboot your system. Follow the Readme.txt to continue flashing the BIOS.

(***Warning**: Do not shut down or reset the system while updating BIOS to prevent possible system boot failure!)

**Question: What's on the CD that came with my motherboard?**

**Answer:** The supplied compact disc has quite a few drivers and programs that will greatly enhance your system. We recommend that you review the CD and install the applications you need. Applications on the CD include chipset drivers for Windows and security and audio drivers.

## 3-4 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alternation, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

# Chapter 4
# BIOS

## 4-1 Introduction

This chapter describes the Phoenix BIOS™ Setup utility for the X7DBR-8+/X7DBR-i+. The Phoenix ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

**Note:** Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the Manual Download area of the Supermicro web site <http://www.supermicro.com> for any changes to the BIOS that may not be reflected in this manual.

### System BIOS

The BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The Phoenix BIOS stores the system parameters, types of disk drives, video displays, etc. in the CMOS. The CMOS memory requires very little electrical power. When the computer is turned off, a backup battery provides power to the CMOS Logic, enabling it to retain system parameters. Each time the computer is powered on the computer is configured with the values stored in the CMOS Logic by the system BIOS, which gains control at boot up.

### How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing the <Delete> key at the appropriate time during system boot. (See below.)

### Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Security and Power menus. Beginning with Section 4-3, detailed descriptions are given for each parameter setting in the Setup utility.

**Warning:** Do not shut down or reset the system while updating BIOS to prevent possible boot failure.

## 4-2 Running Setup

***Default settings are in bold text unless otherwise noted.***

The BIOS setup options described in this section are selected by choosing the appropriate text from the main BIOS Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (see next page).

When you first power on the computer, the Phoenix BIOS™ is immediately activated.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Delete> immediately after turning the system on, or
2. When the message shown below appears briefly at the bottom of the screen during the POST (Power On Self-Test), press the <Delete> key to activate the main Setup menu:

**Press the <Delete> key to enter Setup**

## 4-3 Main BIOS Setup

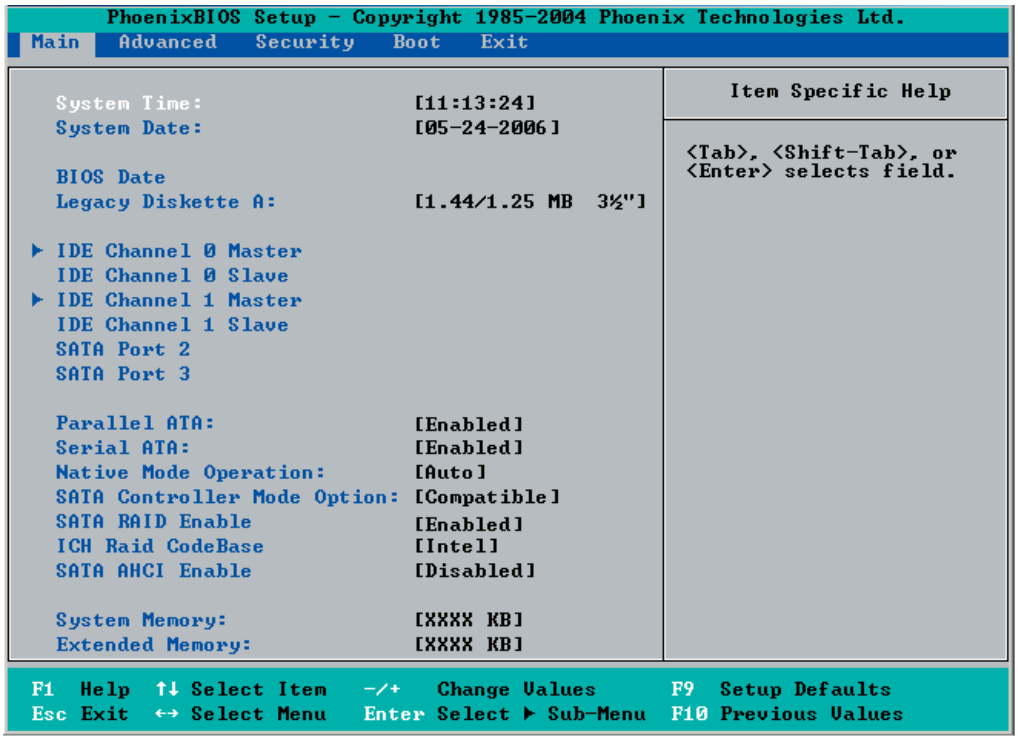
All main Setup options are described in this section. The main BIOS Setup screen is displayed below.

Use the Up/Down arrow keys to move among the different settings in each menu. Use the Left/Right arrow keys to change the options for each setting.

Press the <Esc> key to exit the CMOS Setup Menu. The next section describes in detail how to navigate through the menus.

Items that use submenus are indicated with the ▶ icon. With the item highlighted, press the <Enter> key to access the submenu.

# Main BIOS Setup Menu


PhoenixBIOS Setup - Copyright 1985-2004 Phoenix Technologies Ltd.
Main Advanced Security Boot Exit
System Time: [11:13:24]
System Date: [05-24-2006]
BIOS Date
Legacy Diskette A: [1.44/1.25 MB 3½"]
IDE Channel 0 Master
IDE Channel 0 Slave
IDE Channel 1 Master
IDE Channel 1 Slave
SATA Port 2
SATA Port 3
Parallel ATA: [Enabled]
Serial ATA: [Enabled]
Native Mode Operation: [Auto]
SATA Controller Mode Option: [Compatible]
SATA RAID Enable [Enabled]
ICH Raid CodeBase [Intel]
SATA AHCI Enable [Disabled]
System Memory: [XXXX KB]
Extended Memory: [XXXX KB]
Item Specific Help
<Tab>, <Shift-Tab>, or <Enter> selects field.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Previous Values

## Main Setup Features

### System Time

To set the system date and time, key in the correct information in the appropriate fields. Then press the <Enter> key to save the data.

### System Date

Using the arrow keys, highlight the month, day and year fields, and enter the correct data. Press the <Enter> key to save the data.

### BIOS Date

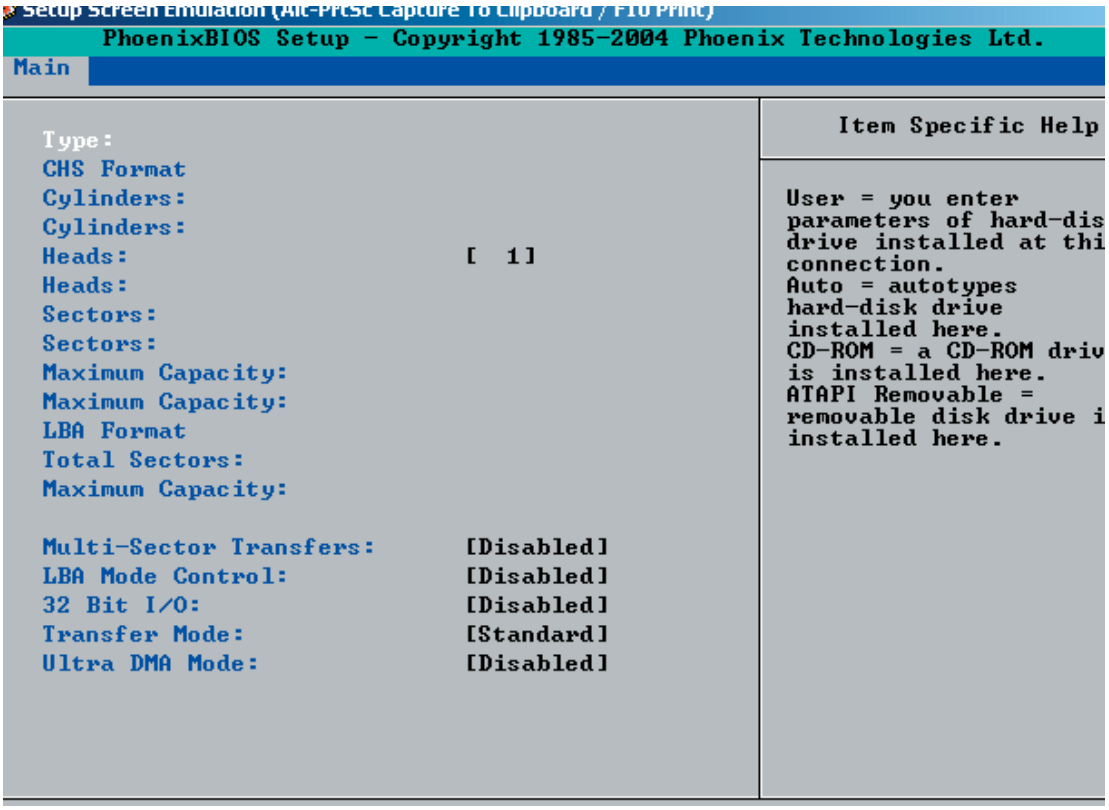
This field displays the date when this version of BIOS was built.

### Legacy Diskette A

This setting allows the user to set the type of floppy disk drive installed as diskette A. The options are Disabled, 360Kb 5.25 in, 1.2MB 5.25 in, 720Kb 3.5 in, **1.44/1.25MB**, 3.5 in and 2.88MB 3.5 in.

### ▶IDE Channel 0 Master/Slave, IDE Channel 1 Master/Slave, SATA Port2 and SATA Port3

These settings allow the user to set the parameters of IDE Channel 0 Master/ Slave, IDE Channel 1 Master/Slave, IDE Channel 2 Master, IDE Channel 3 Master slots. Hit <Enter> to activate the following sub-menu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the sub-menu are:




#### Type

Selects the type of IDE hard drive. The options are **Auto**, (which allows the BIOS to automatically determine the hard drive's capacity, number of heads, etc.), a number from 1-39 to select a predetermined type of hard drive, CDROM and ATAPI Removable. The option "User" will allow the user to enter the parameters of the HDD installed at this connection. The option "Auto" will allow the BIOS to automatically configure the parameters of the HDD installed at the connection. Choose the option 1-39 to select a predetermined HDD type. Select CDROM if a CDROM drive is installed. Select ATAPI if a removable disk drive is installed.

**CHS Format**

The following items will be displayed by the BIOS:

**TYPE:** This item displays the type of IDE or SATA Device.

**Cylinders:** This item indicates the status of Cylinders.

**Headers:** This item indicates the number of headers.

**Sectors:** This item displays the number of sectors.

**Maximum Capacity:** This item displays the maximum storage capacity of the system.

**LBA Format**

The following items will be displayed by the BIOS:

**Total Sectors:** This item displays the number of total sectors available in the LBA Format.

**Maximum Capacity:** This item displays the maximum capacity in the LBA Format.

### Multi-Sector Transfers

This item allows the user to specify the number of sectors per block to be used in multi-sector transfer. The options are **Disabled**, 4 Sectors, 8 Sectors, and 16 Sectors.

### LBA Mode Control

This item determines whether the Phoenix BIOS will access the IDE Channel 0 Master Device via the LBA mode. The options are Enabled and **Disabled.**

### 32 Bit I/O

This option allows the user to enable or disable the function of 32-bit data transfer. The options are Enabled and **Disabled**.

### Transfer Mode

This option allows the user to set the transfer mode. The options are **Standard**, Fast PIO1, Fast PIO2, Fast PIO3, Fast PIO4, FPIO3/DMA1 and FPIO4/DMA2.

### Ultra DMA Mode

This option allows the user to select Ultra DMA Mode. The options are **Disabled**, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4, and Mode 5.

### Parallel ATA

This setting allows the user to enable or disable the function of Parallel ATA. The options are Disabled and **Enabled**.

### Serial ATA

This setting allows the user to enable or disable the function of Serial ATA. The options are Disabled and **Enabled.**

### Native Mode Operation

Select the native mode for ATA. The options are: Serial ATA, Both, and **Auto**.

### SATA Controller Mode

Select **Compatible** to allow the SATA and PATA drives to be automatically-detected and be placed in the Legacy Mode by the BIOS. Select Enhanced to allow the SATA and PATA drives to be to be automatically-detected and be placed in the Native IDE Mode. (***Note: The Enhanced mode is supported by the Windows 2000 OS or a later version.)**

When the SATA Controller Mode is set to "Enhanced", the following items will display:

### Serial ATA (SATA) RAID Enable

Select Enable to enable Serial ATA RAID Functions. (*For the Windows OS environment, use the RAID driver if this feature is set to Enabled. When this item is set to Enabled, the item: "ICH RAID Code Base" will be available for you to select either Intel or Adaptec Host RAID firmware. If this item is set to **Disabled**, the item-SATA AHCI Enable will be available.) The options are Enabled and **Disabled**.

### ICH RAID Code Base

Select Intel to enable Intel's SATA RAID firmware. Select Adaptec to use Adaptec's HostRAID firmware. The options are **Intel** and Adaptec**.**

### SATA AHCI

Select Enable to enable the function of Serial ATA Advanced Host Interface. (*Take caution when using this function. This feature is for advanced programmers only. The options are Enabled and **Disabled**.)

### System Memory

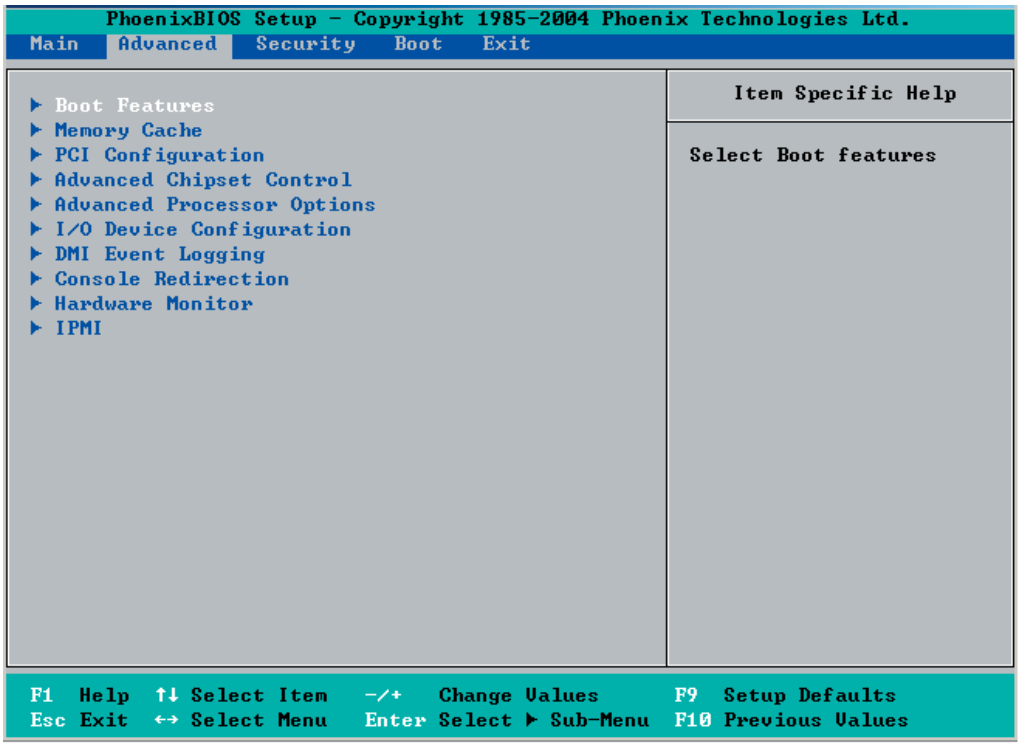
This display informs you how much system memory is recognized as being present in the system.

### Extended Memory

This display informs you how much extended memory is recognized as being present in the system.

## 4-4 Advanced Setup

Choose Advanced from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. The items with a triangle beside them have sub menus that can be accessed by highlighting the item and pressing <Enter>.



## ▶Boot Features

Access the submenu to make changes to the following settings.

### QuickBoot Mode

If enabled, this feature will speed up the POST (Power On Self Test) routine by skipping certain tests after the computer is turned on. The settings are **Enabled** and Disabled. If Disabled, the POST routine will run at normal speed.

### QuietBoot Mode

This setting allows you to **Enable** or Disable the graphic logo screen during boot-up.

### POST Errors

Set to **Enabled** to display POST Error Messages if an error occurs during bootup. If set to Disabled, the system will continue to boot without displaying any error messages even when a boot error occurs.

### ACPI Mode

Use the setting to determine if you want to employ ACPI (Advanced Configuration and Power Interface) power management on your system. The options are **Yes** and No.

### Power Button Behavior

If set to **Instant-Off**, the system will power off immediately as soon as the user hits the power button. If set to 4-sec., the system will power off when the user presses the power button for 4 seconds or longer. The options are instant-off and 4-sec override.

### Resume On Modem Ring

Select On to “wake your system up” when an incoming call is received by your modem. The options are On and **Off**.

### Power Loss Control

This setting allows you to choose how the system will react when power returns after an unexpected loss of power. The options are Stay Off, Power On, and **Last State**.

### Watch Dog

If enabled, this option will automatically reset the system if the system is not active for more than 5 minutes. The options are Enabled and **Disabled**.

### Summary Screen

This setting allows you to **Enable** or Disable the summary screen which displays the system configuration during bootup.

## ▶Memory Cache

### Cache System BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a System BIOS buffer to allow the BIOS write (cache) its data into this reserved memory area. Select "**Write Protect**" to enable this function, and this area will be reserved for BIOS ROM access only. Select "Uncached" to disable this function and make this area available for other devices.

### Cache Video BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a Video BIOS buffer to allow the BIOS write (cache) its data into this reserved memory area. Select "**Write Protect**" to enable the function and this area will be reserved for Video BIOS ROM access only. Select "Uncached" to disable this function and make this area available for other devices.

### Cache Base 0-512K

If enabled, this feature will allow the data stored in the base memory area: block 0-512K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or to be written into L1, L2 cache inside the CPU to speed up CPU operations. Select "Uncached" to disable this function. Select "Write Through" to allow data to be cached into the buffer and written into the system memory at the same time. Select "Write Protect" to prevent data from being written into the base memory area of Block 0-512K. Select "Write Back" to allow CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

### Cache Base 512K-640K

If enabled, this feature will allow the data stored in the memory area: 512K-640K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or written into L1, L2, L3 cache inside the CPU to speed up CPU operations. Select "Uncached" to disable this function. Select "Write Through" to allow data to be cached into the buffer and written into the system memory at the same time. Select "Write Protect" to prevent data from being written into the base memory area of Block 512-640K. Select "Write Back" to allow CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

### Cache Extended Memory

If enabled, this feature will allow the data stored in the extended memory area to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or written into L1, L2, L3 cache inside the CPU to speed up CPU operations.

Select "Uncached" to disable this function. Select "Write Through" to allow data to be cached into the buffer and written into the system memory at the same time. Select "Write Protect" to prevent data from being written into the base memory area of Block 0-512K. Select "Write Back" to allow CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

### Discrete MTRR Allocation

If enabled, MTRRs (-Memory Type Range Registers) are configured as distinct, separate units and cannot be overlapped. If enabled, the user can achieve better graphic effects when using a Linux graphic driver that requires the write-combining configuration with 4GB or more memory. The options are Enabled and **Disabled**.

### ▶PCI Configuration

Access the submenu to make changes to the following settings for PCI devices.

### Onboard GLAN1/Onboard GLAN2 (Gigabit- LAN) OPROM Configure

Enabling this option provides the capability to boot from GLAN. The options are **Disabled** and Enabled.

### Onboard SCSI OPROM Configure

Enabling this option provides the capitally to boot from SCSI HDD. The options are Disabled and **Enabled**.

### PCI Parity Error Forwarding

The feature allows SERR and PERR errors detected in PCI slots to be sent (forwarded) to the BIOS DMI Event Log for the user to review. The options are Enabled and **Disabled**.

### Reset Configuration Data

If set to Yes, this setting clears the Extended System Configuration Data- (ESCD) area. The options are Yes and **No**.

### Frequency for PCI-X#1, MASS (-Mass Data Storage)/ZCR (-Zero Channel RAID)

This option allows the user to change the bus frequency for the devices installed in the slot indicated. The options are **Auto**, PCI 33 MHz, PCI 66 MHz, PCI-X 66 MHz, PCI-X 100 MHz, and PCI-X 133 MHz. (*Note: PCI-X 133MHz is not supported by ZCR.)

### ▶Slot1 PCI-X 133MHz, Slot2 PCI-Exp x8/x4, Slot3 PCI-Exp x4, Slot4 PCI-Exp x8 and Slot5 PCI-Exp x8

Access the submenu for each of the settings above to make changes to the following:

#### Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

#### Enable Master

This setting allows you to enable the selected device as the PCI bus master. The options are **Enabled** and Disabled.

#### Latency Timer

This setting allows you to set the clock rate for Bus Master. A high-priority, high-throughout device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, and 00E0h. For Unix, Novell and other Operating Systems, please select the option: other. If a drive fails after the installation of a new software, you might want to change this setting and try again. A different OS requires a different Bus Master clock rate**.**

### Large Disk Access Mode

This setting determines how large hard drives are to be accessed. The options are **DOS** or Other (for Unix, Novelle NetWare and other operating systems).

### ▶Advanced Chipset Control

Access the submenu to make changes to the following settings.

*__Warning__: Take Caution when changing the Advanced settings. Incorrect values entered may cause system malfunction. Also, a very high DRAM frequency or incorrect DRAM timing may cause system instability. When this occurs, revert to the default setting.

### SERR Signal Condition

This setting specifies the ECC Error conditions that an SERR# is to be asserted. The options are None, **Single Bit**, Multiple Bit, and Both.

### 4GB PCI Hole Granularity

This feature allows you to select the granularity of PCI hole for PCI slots. If MTRRs are not enough, this option may be used to reduce MTRR occupation. The options are: **256 MB**, 512 MB, 1GB and 2GB.

### Memory Branch Mode

This option determines how the two memory branches operate. System address space can either be interleaved between the two branches or Sequential from one branch to another. Mirror mode allows data correction by maintaining two copies of data in two branches. Single Channel 0 allows a single DIMM population during system manufacturing. The options are **Interleave**, Sequential, Mirroring, and Single Channel 0.

### Branch 0 Rank Sparing

Select enable to enable the sparing feature for Branch 0 Rank. The options are Enabled and **Disabled**.

### Branch 1 Rank Sparing

Select enable to enable the sparing feature for Branch 0 Rank. The options are Enabled and **Disabled**.

### Enhanced x8 Detection

Select **Enabled** to enable Enhanced x8 DRAM UC Error Detection. The options are Disabled and **Enabled**.

### Crystal Beach Features

This feature, designed to work with Intel's I/O AT (Acceleration) Technology, will greatly enhance the performance of TOE devices if enabled. (***Note**: A TOE device is a specialized, dedicated processor that is installed on an add-on card or a network card to handle some or all packet processing of this add-on card. For this motherboard, the TOE device is built inside the ESB 2 South Bridge chip.) The options are **Enabled** and Disabled.

### Route Port 80h Cycles to

This feature allows the user to decide which bus to send debug information to. The options are PCI and **LPC**.

### Clock Spectrum Feature

If Enabled, the BIOS will monitor the level of Electromagnetic Interference caused by the components and will attempt to decrease the interference whenever needed. The options are Enabled and **Disabled**.

### Enabling Multi-Media Timer

Select Yes to activate a set of timers that are alternative to the traditional 8254 timers for the OS use. The options are Yes and **No**.

### USB Function

Select Enabled to activate USB devices specified by the user. The settings are **Enabled** and Disabled.

### Legacy USB Support

This setting allows you to enable support for Legacy USB devices. The settings are **Enabled** and Disabled.

## ▶Advanced Processor Options

Access the submenu to make changes to the following settings.

### CPU Speed

This is a display that indicates the speed of the installed processor.

### Frequency Ratio (*Available when supported by the CPU.)

The feature allows the user to set the internal frequency multiplier for the CPU. The options are: **Default,** x12, x13, x14, x15, x16, x17 and x18.

### Hyperthreading (*Available when supported by the CPU.)

Set to Enabled to use the Hyperthreading Technology, which will result in increased CPU performance. The options are Disabled and **Enabled.**

### Core-Multi-Processing (*Available when supported by the CPU.)

Set to Enabled to use a processor's Second Core and beyond. (Please refer to Intel's web site for more information.) The options are Disabled and **Enabled.**

### Machine Checking (*Available when supported by the CPU.)

Set to Enabled to activate the function of Machine Checking and allow the CPU to detect and report hardware (machine) errors via a set of model-specific registers (MSRs). The options are Disabled and **Enabled**.

### Thermal Management 2 (*Available when supported by the CPU.)

Set to **Enabled** to use Thermal Management 2 (TM2) which will lower CPU voltage and frequency when the CPU temperature reaches a predefined overheat threshold. Set to Disabled to use Thermal Manager 1 (TM1), allowing CPU clocking to be regulated via CPU Internal Clock modulation when the CPU temperature reaches the overheat threshold.

### C1 Enhanced Mode (*Available when supported by the CPU.)

Set to Enabled to enable Enhanced Halt State to lower CPU voltage/frequency to prevent overheat. The options are Enabled and **Disabled**. (***Note:** please refer to Intel's web site for detailed information.)

### Execute Disable Bit (*Available when supported by the CPU.)

Set to Enabled to enable Execute Disable Bit and allow the processor to classify areas in memory where an application code can execute and where it cannot, and thus preventing a worm or a virus from inserting and creating a flood of codes to overwhelm the processor or damage the system during an attack.

(*Note: this feature is available when your OS and your CPU support the function of Execute Disable Bit.) The options are **Disabled** and Enabled. (Note: For more information regarding hardware/software support for this function, please refer to Intel's and Microsoft's web sites.)

### Adjacent Cache Line Prefetch (*Available when supported by the CPU.)

The CPU fetches the cache line for 64 bytes if this option is set to Disabled. The CPU fetches both cache lines for 128 bytes as comprised if Enabled. The options are **Disabled** and Enabled.

### Hardware Prefetcher (*Available when supported by the CPU.)

Set to this option to **enabled** to enable the hardware components that are used in conjunction with software programs to prefetch data in order to shorten execution cycles and maximize data processing efficiency. The options are Disabled and **Enabled**.

### PECI Absent Alarm (*Available when supported by the CPU.)

If set to **Enabled,** the PECI Absent Alarm will be activated if the function of PECI (Platform Environment Control Interface) is not available for the onboard process(s) or for the motherboard. The options are Disabled and **Enabled**.

### Intel <R> Virtualization Technology (*Available when supported by the CPU.)

Select Enabled to use the feature of Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are Enabled and **Disabled**. (*Note: If there is any change to this setting, you will need to power off and restart the system for the change to take effect.) Please refer to Intel's web site for detailed information.

### Intel EIST Support (*Available when supported by the CPU.)

Select Enabled to use the Enhanced Intel SpeedStep Technology and allows the system to automatically adjust processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. The options are Enabled and **Disabled**. **Please refer to Intel's web site for detailed information.**

### ▶I/O Device Configuration

Access the submenu to make changes to the following settings.

### KBC Clock Input

This setting allows you to select clock frequency for KBC. The options are 6MHz, 8MHz, **12MHz,** and 16MHz.

### Serial Port A

This setting allows you to assign control of serial port A. The options are **Enabled** (user defined), Disabled, and Auto (BIOS- or OS- controlled).

### Base I/O Address

This setting allows you to select the base I/O address for serial port A. The options are **3F8**, 2F8, 3E8, and 2E8.

### Interrupt

This setting allows you to select the IRQ (interrupt request) for serial port A. The options are IRQ3 and **IRQ4**.

### Serial Port B

This setting allows you to assign control of serial port B. The options are **Enabled** (user defined), Disabled, Auto (BIOS controlled) and OS Controlled.

### Mode

This setting allows you to set the type of device that will be connected to serial port B. The options are **Normal** and IR (for an infrared device).

### Base I/O Address

This setting allows you to select the base I/O address for serial port B. The options are 3F8, **2F8**, 3E8 and 2E8.

### Interrupt

This setting allows you to select the IRQ (interrupt request) for serial port B. The options are **IRQ3** and IRQ4.

### Floppy Disk Controller

This setting allows you to assign control of the floppy disk controller. The options are **Enabled** (user defined), Disabled, and Auto (BIOS and OS controlled).

### Base I/O Address

This setting allows you to select the base I/O address for the Floppy port. The options are **Primary** and Secondary.

## ▶DMI Event Logging

Access the submenu to make changes to the following settings.

### Event Log Validity

This is a display to inform you of the event log validity. It is not a setting.

### Event Log Capacity

This is a display to inform you of the event log capacity. It is not a setting.

### View DMI Event Log

Highlight this item and press <Enter> to view the contents of the event log.

### Event Logging

This setting allows you to **Enable** or Disable event logging.

### ECC Event Logging

This setting allows you to **Enable** or Disable ECC event logging.

### Mark DMI Events as Read

Highlight this item and press <Enter> to mark the DMI events as read.

### Clear All DMI Event Logs

Select Yes and press <Enter> to clear all DMI event logs. The options are Yes and **No**.

## ▶Console Redirection

Access the submenu to make changes to the following settings.

### COM Port Address

This item allows you to specify which COM port to direct the remote console to: Onboard COM A or Onboard COM B. This setting can also be **Disabled**.

### BAUD Rate

This item allows you to set the BAUD rate for console redirection. The options are 300, 1200, 2400, 9600, **19.2K**, 38.4K, 57.6K, and 115.2K.

### Console Type

This item allows you to set console redirection type. The options are VT100, VT100,8bit, PC-ANSI, 7bit, **PC ANSI**, VT100+, VT-UTF8 and ASCII.

### Flow Control

This item allows you to select the flow control option for console redirection. The options are: None, XON/XOFF, and **CTS/RTS**.

### Console Connection

This item allows you to decide how console redirection is to be connected: either **Direct** or Via Modem.

### Continue CR after POST

Choose whether to continue with console redirection after the POST routine. The options are On and **Off**.

## ▶Hardware Monitor Logic

***Note: The Phoenix BIOS will automatically detect the type of CPU(s) and hardware monitoring chip used on the motherboard and will display the Hardware Monitoring Screen accordingly. Your Hardware Monitoring Screen may look like the one shown on this page, on P. 4-19, or on P. 4-20, depending on the type of CPU(s) and HW Monitoring chip you are using.**

### CPU Temperature Threshold

This option allows the user to set a CPU temperature threshold that will activate the alarm system when the CPU temperature reaches this pre-set temperature threshold. The options are 70°C, 75°C, **80°C** and 85°C.

Highlight this and hit <Enter> to see monitor data for the following items:

**CPU1 Temperature**

**CPU1 Second Core Temperature**

**CPU2 Temperature**

**CPU2 Second Core Temperature**

**System Temperature**

**Fan1-Fan5 Speeds**: If the feature of Auto Fan Control is enabled, the BIOS will automatically display the status of the fans indicated in this item.

**Fan Speed Control Modes**

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vice versa. This option is to "3-pin fan" to allow the fan speed to be controlled by voltage. Select "Disable" to disable the fan speed control function to allow the onboard fans to constantly run at full speed (12V). The Options are: **1. Disable**, 2. 3-pin (Server), 3. 3-pin (Workstation).

### Voltage Monitoring

The following items will be monitored and displayed:

P12V_VR0
P12V_VR1
FSB VTT
PXHV Vcore
ES2B Vcore
CPU1Vcore
CPU2Vcore
P3V3

## ▶Hardware Monitor Logic

### CPU Temperature Threshold (*See the Note on Page 4-18.)

This option allows the user to set a CPU temperature threshold that will activate the alarm system when the CPU temperature reaches this pre-set temperature threshold. The options are 70°C, 75°C, **80°C** and 85°C.

Highlight this and hit <Enter> to see monitor data for the following items:

**CPU1 Temperature**

**CPU1 Second Core**

**CPU2 Temperature**

**CPU2 Second Core**

**System Temperature**

**Fan1-Fan5 Speeds**: If the feature of Auto Fan Control is enabled, the BIOS will automatically display the status of the fans indicated in this item.

**Fan Speed Control Modes**

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vice versa. This option is to "3-pin fan" to allow the fan speed to be controlled by voltage. Select "Disable" to disable the fan speed control function to allow the onboard fans to constantly run at full speed (12V). The Options are: **1. Disable**, 2. 3-pin (Server), 3. 3-pin (Workstation).

### Voltage Monitoring

The following items will be monitored and displayed:

Vcore A
Vcore B
-12V
P1V5
+3.3V
+12V
5Vsb
5VDD
P_VTT
Vbat

## ▶Hardware Monitor Logic (*See the Note on Page 4-18.)

### CPU Temperature Threshold

This option allows the user to set a CPU temperature threshold that will activate the alarm system when the CPU temperature reaches this pre-set temperature threshold. The hardcode default setting is **75ºC**.

**CPU1 Temperature/CPU1 Second Core**

**CPU2 Temperature/CPU2 Second Core**

### Temperature Monitoring (*Available if supported by the CPU)

Highlight this and hit <Enter> to see monitor data for the following PECI (Platform Environment Control Interface) items:

**PECI Agent 1 Temperature**

**PECI Agent 2 Temperature**

**PECI Agent 3 Temperature**

**PECI Agent 4 Temperature**

**System Temperature**

**Fan1-Fan5 Speeds**: If the feature of Auto Fan Control is enabled, the BIOS will automatically display the status of the fans indicated in this item.

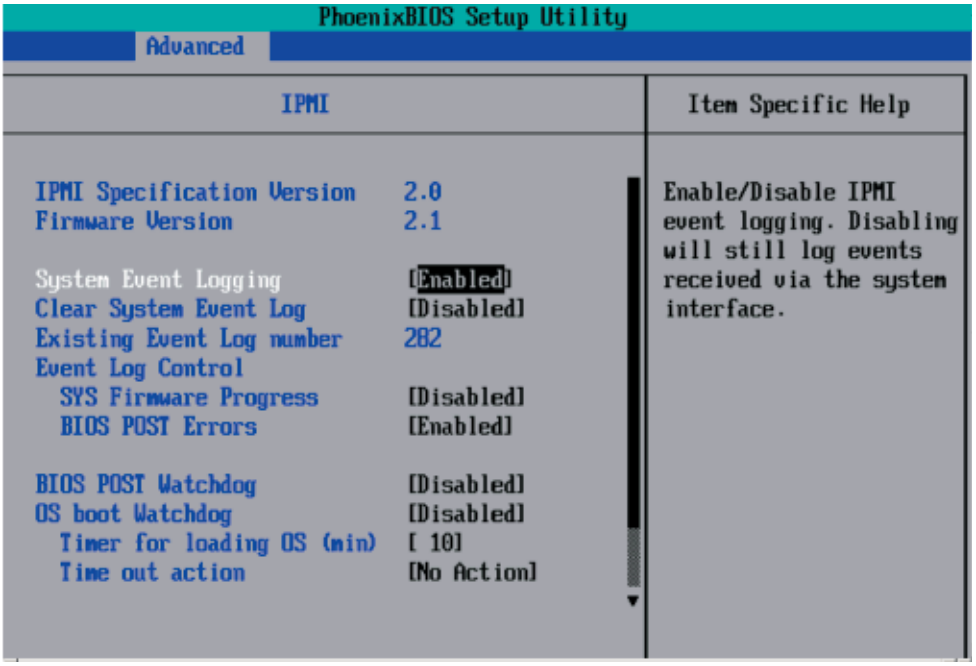
**Fan Speed Control Modes**

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vice versa. This option is to "3-pin fan" to allow the fan speed to be controlled by voltage. Select "Disable" to disable the fan speed control function to allow the onboard fans to constantly run at full speed (12V). The Options are: **1. Disable**, 2. 3-pin (Server), 3. 3-pin (Workstation).

### Voltage Monitoring

The following items will be monitored and displayed:
Vcore A:
Vcore B:
-12V
P1V2_NIC_SEN
+3.3V
+12V
5Vsb
5VDD
P_VTT
Vbat

**▶IPMI (The option is available only when an IPMI card is installed in the system.)**


PhoenixBIOS Setup Utility
Advanced
IPMI
Item Specific Help
IPMI Specification Version 2.0
Firmware Version 2.1
System Event Logging [Enabled]
Clear System Event Log [Disabled]
Existing Event Log number 282
Event Log Control
SYS Firmware Progress [Disabled]
BIOS POST Errors [Enabled]
BIOS POST Watchdog [Disabled]
OS boot Watchdog [Disabled]
Timer for loading OS (min) [ 10]
Time out action [No Action]
Enable/Disable IPMI event logging. Disabling will still log events received via the system interface.

**IPMI Specification Version:** This item displays the current IPMI Version.

**Firmware Version:** This item displays the current Firmware Version.

### System Event Logging

Select Enabled to enable IPMI Event Logging. When this function is set to Disabled, the system will continue to log events received via system interface. The options are **Enabled** and Disabled.

### Clear System Event Logging

Enabling this function to force the BIOS to clear the system event logs during the next cold boot. The options are Enabled and **Disabled**.

### Existing Event Log Number

This item displays the number of the existing event log.

### Event Log Control

#### System Firmware Progress

Enabling this function to log POST progress. The options are Enabled and **Disabled**.

#### BIOS POST Errors

Enabling this function to log POST errors. The options are Enabled and **Disabled**.

#### BIOS POST Watch Dog

Set to Enabled to enable POST Watch Dog. The options are Enabled and **Disabled**.

**OS Boot Watch Dog**

Set to Enabled to enable OS Boot Watch Dog. The options are Enabled and **Disabled**.

**Timer for Loading OS (Minutes)**

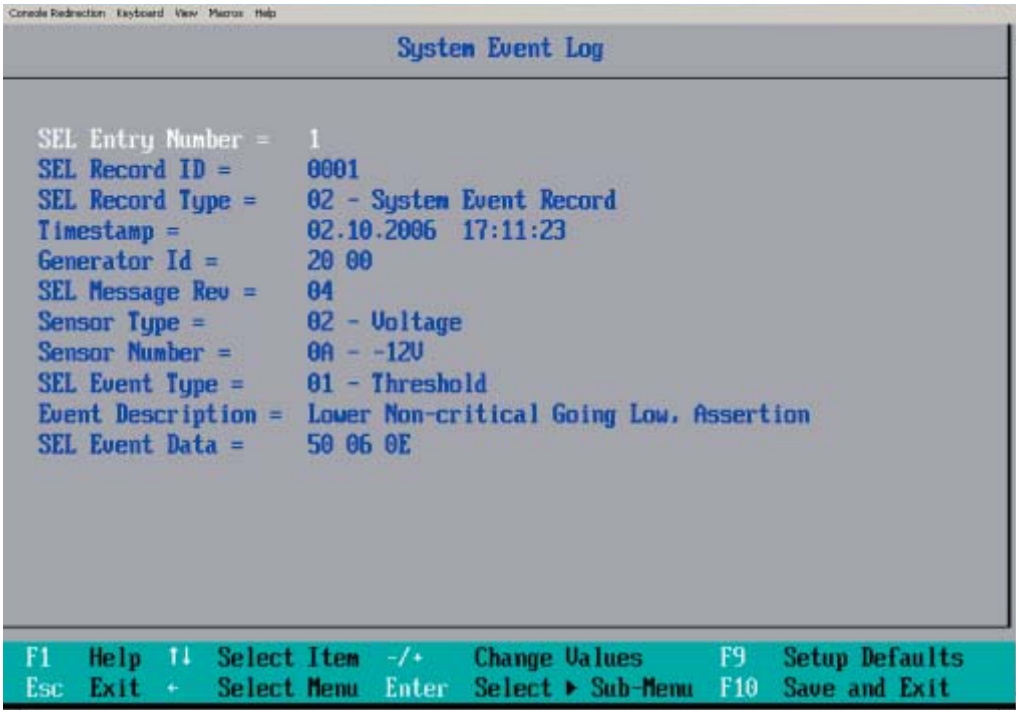
This feature allows the user to set the time value (in minutes) for the previous item: OS Boot Watch Dog by keying-in a desired number in the blank. The default setting is 10 (minutes.) (Please ignore this option when OS Boot Watch Dog is set to "Disabled".)

**Time Out Option**

This feature allows the user to determine what action to take in an event of a system boot failure. The options are **No Action**, Reset, Power Off and Power Cycles.

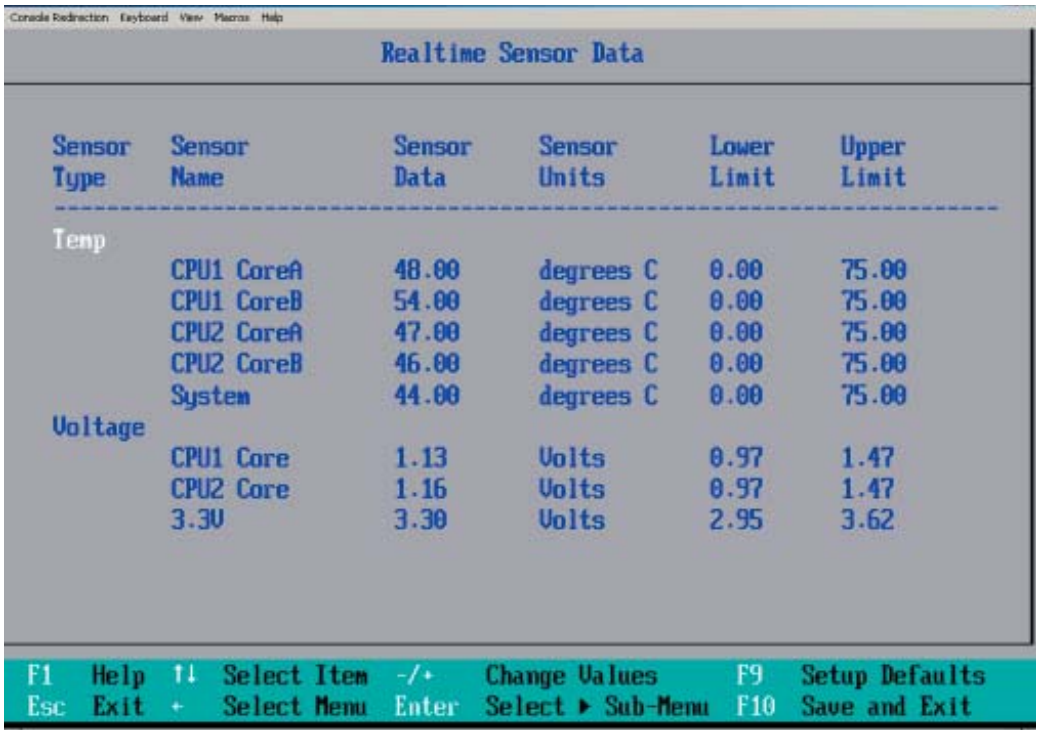
## ▶System Event Log/System Event Log (List Mode)

These options display the System Event (SEL) Log and System Event (SEL) Log in List Mode. Items include: SEL (System Event Log) Entry Number, SEL Record ID, SEL Record Type, Time Stamp, Generator ID, SEL Message Revision, Sensor Type, Sensor Number, SEL Event Type, Event Description, and SEL Event Data.


Console Redirection Keyboard View Macros Help
System Event Log
SEL Entry Number = 1
SEL Record ID = 0001
SEL Record Type = 02 - System Event Record
Timestamp = 02.10.2006 17:11:23
Generator Id = 20 00
SEL Message Rev = 04
Sensor Type = 02 - Voltage
Sensor Number = 0A - -12V
SEL Event Type = 01 - Threshold
Event Description = Lower Non-critical Going Low, Assertion
SEL Event Data = 50 06 0E
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ← Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

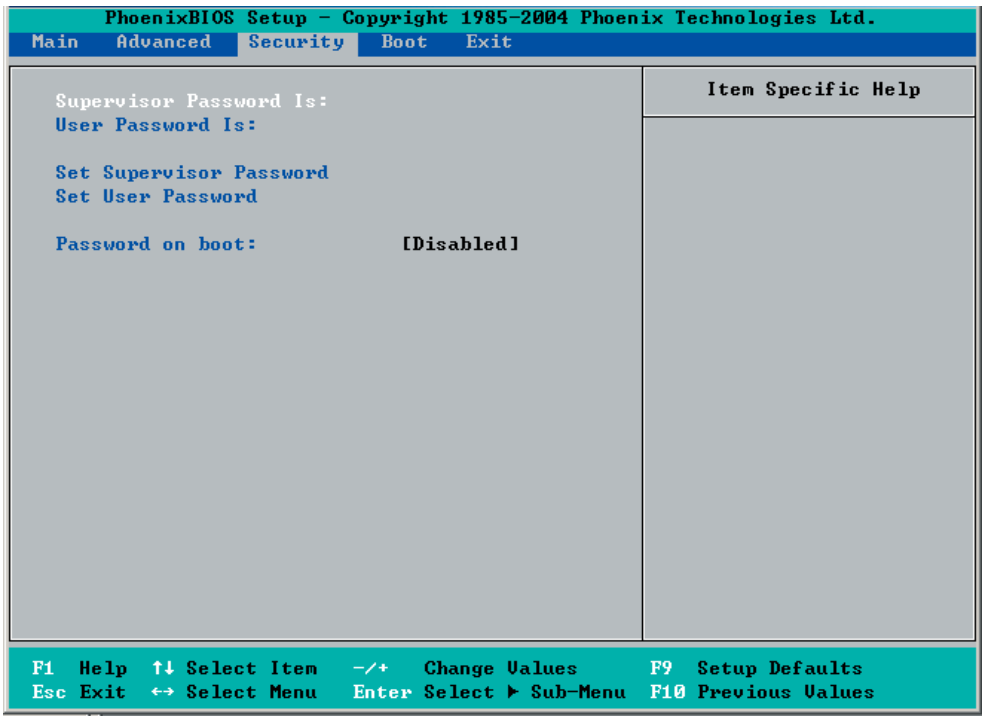
## ▶Realtime Sensor Data

This feature display information from motherboard sensors, such as temperatures, fan speeds and voltages of various components.


Console Redirection Keyboard View Macros Help
Realtime Sensor Data
Sensor Type
Sensor Name
Sensor Data
Sensor Units
Lower Limit
Upper Limit
Temp
CPU1 CoreA 48.00 degrees C 0.00 75.00
CPU1 CoreB 54.00 degrees C 0.00 75.00
CPU2 CoreA 47.00 degrees C 0.00 75.00
CPU2 CoreB 46.00 degrees C 0.00 75.00
System 44.00 degrees C 0.00 75.00
Voltage
CPU1 Core 1.13 Volts 0.97 1.47
CPU2 Core 1.16 Volts 0.97 1.47
3.3V 3.30 Volts 2.95 3.62
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ← Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

## 4-5 Security

Choose Security from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. Security setting options are displayed by highlighting the setting using the arrow keys and pressing <Enter>. All Security BIOS settings are described in this section.


PhoenixBIOS Setup - Copyright 1985-2004 Phoenix Technologies Ltd.
Main Advanced Security Boot Exit
Supervisor Password Is:
User Password Is:
Set Supervisor Password
Set User Password
Password on boot: [Disabled]
Item Specific Help
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Previous Values

### Supervisor Password Is:

This displays whether a supervisor password has been entered for the system. Clear means such a password has not been used and Set means a supervisor password has been entered for the system.

### User Password Is:

This displays whether a user password has been entered for the system. Clear means such a password has not been used and Set means a user password has been entered for the system.

### Set Supervisor Password

When the item "Set Supervisor Password" is highlighted, hit the <Enter> key. When prompted, type the Supervisor's password in the dialogue box to set or to change supervisor's password, which allows access to the BIOS.

### Set User Password

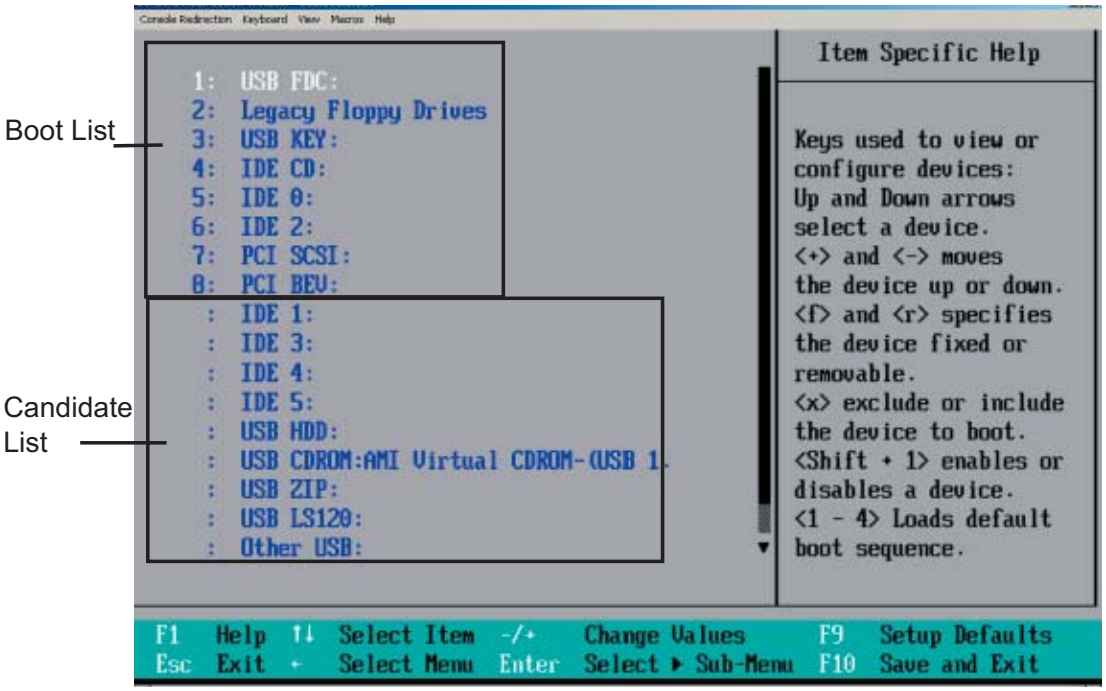
When the item "Set User Password" is highlighted, hit the <Enter> key. When prompted, type the user's password in the dialogue box to set or to change the user's password, which allows access to the system at boot-up.

### Password on Boot

This setting allows you to decide if a password is required for system boot. The options are **Enabled** (password required) and Disabled (password not required).

## 4-6 Boot

Choose Boot from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. See details on how to change the order and specs of boot devices in the Item Specific Help window. All Boot BIOS settings are described in this section.

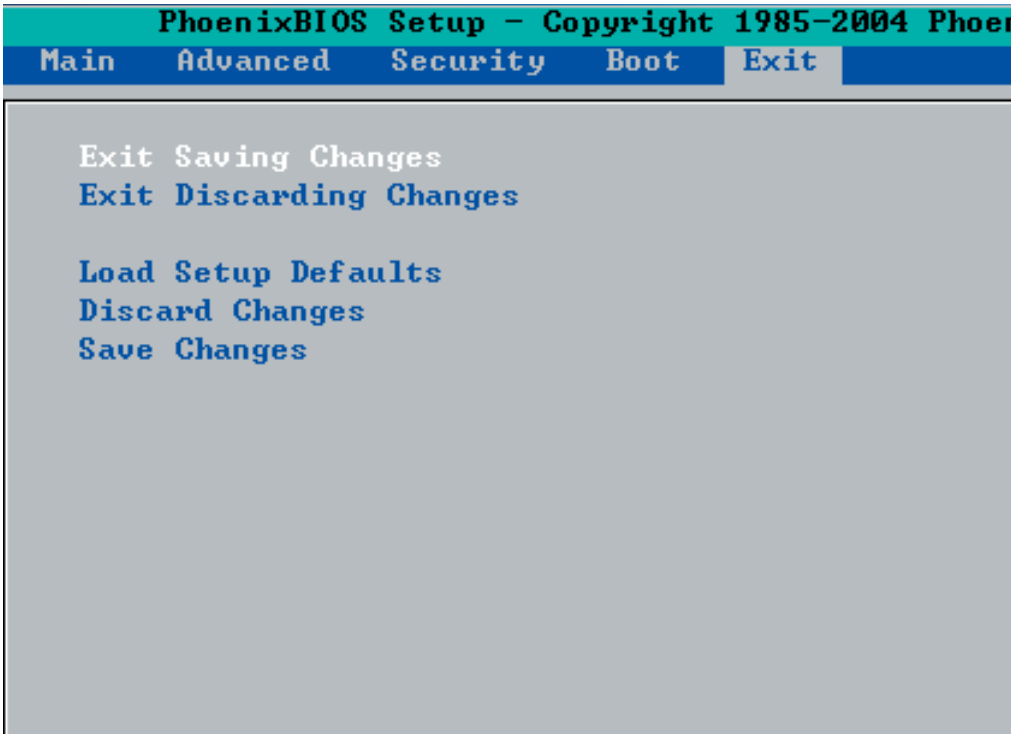

Boot List
Candidate List
1: USB FDC:
2: Legacy Floppy Drives
3: USB KEY:
4: IDE CD:
5: IDE 0:
6: IDE 2:
7: PCI SCSI:
8: PCI BEV:
: IDE 1:
: IDE 3:
: IDE 4:
: IDE 5:
: USB HDD:
: USB CDROM:AMI Virtual CDROM-(USB 1.
: USB ZIP:
: USB LS120:
: Other USB:
Item Specific Help
Keys used to view or configure devices:
Up and Down arrows select a device.
<+> and <-> moves the device up or down.
<f> and <r> specifies the device fixed or removable.
<x> exclude or include the device to boot.
<Shift + 1> enables or disables a device.
<1 - 4> Loads default boot sequence.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ← Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

### Boot Priority Order/Excluded from Boot Orders

The devices included in the boot list section (above) are bootable devices listed in the sequence of boot order as specified. The boot functions for the devices included in the candidate list (above) are currently disabled. Use a <+> key or a <-> key to move the device up or down. Use the <f> key or the <r> key to specify the type of an USB device, either fixed or removable. You can select one item from the boot list and hit the <x> key to remove it from the list of bootable devices (to make its resource available for other bootable devices). Subsequently, you can select an item from the candidate list and hit the <x> key to remove it from the candidate list and put it in the boot list. This item will then become a bootable device. See details on how to change the priority of boot order of devices in the "Item Specific Help" window.

## 4-7 Exit

Choose Exit from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. All Exit BIOS settings are described in this section.




### Exit Saving Changes

Highlight this item and hit <Enter> to save any changes you've made and to exit the BIOS Setup utility.

### Exit Discarding Changes

Highlight this item and hit <Enter> to exit the BIOS Setup utility without saving any changes you may have made.

### Load Setup Defaults

Highlight this item and hit <Enter> to load the default settings for all items in the BIOS Setup. These are the safest settings to use.

### Discard Changes

Highlight this item and hit <Enter> to discard (cancel) any changes you've made. You will remain in the Setup utility.

### Save Changes

Highlight this item and hit <Enter> to save any changes you've made. You will remain in the Setup utility.

# Appendix A
# BIOS POST Messages

During the Power-On Self-Test (POST), the BIOS will check for problems. If a problem is found, the BIOS will activate an alarm or display a message. The following is a list of such BIOS messages.

**Failure Fixed Disk**
Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run Setup. Find out if the fixed-disk type is correctly identified.

**Stuck key**
Stuck key on keyboard.

**Keyboard error**
Keyboard not working.

**Keyboard Controller Failed**
Keyboard controller failed test. May require replacing keyboard controller.

**Keyboard locked - Unlock key switch**
Unlock the system to proceed.

**Monitor type does not match CMOS - Run SETUP**
Monitor type not correctly identified in Setup

**Shadow Ram Failed at offset: nnnn**
Shadow RAM failed at offset **nnnn** of the 64k block at which the error was detected.

**System RAM Failed at offset: nnnn**
System RAM failed at offset **nnnn** of in the 64k block at which the error was detected.

**Extended RAM Failed at offset: nnnn** Extended memory not working or not configured properly at offset **nnnn.**

**System battery is dead - Replace and run SETUP**
The CMOS clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.

**System CMOS checksum bad - Default configuration used**
System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. The BIOS installed Default Setup Values. If you do not want these values, enter Setup and enter your own values. If the error persists, check the system battery or contact your dealer.

**System timer error**
The timer test failed. Requires repair of system board.

**Real time clock error**
Real-Time Clock fails BIOS hardware test. May require board repair.

**Check date and time settings**
BIOS found date or time out of range and reset the Real-Time Clock. May require setting legal date (1991-2099).

**Previous boot incomplete - Default configuration used**
Previous POST did not complete successfully. POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. On systems with control of **wait states**, improper Setup settings can also terminate POST and cause this error on the next boot. Run Setup and verify that the waitstate configuration is correct. This error is cleared the next time the system is booted.

**Memory Size found by POST differed from CMOS**
Memory size found by POST differed from CMOS.

**Diskette drive A error**
**Diskette drive B error**
Drive A: or B: is present but fails the BIOS POST diskette tests. Check to see that the drive is defined with the proper diskette type in Setup and that the diskette drive is attached correctly.

**Incorrect Drive A type - run SETUP**
Type of floppy drive A: not correctly identified in Setup.

**Incorrect Drive B type - run SETUP**
Type of floppy drive B: not correctly identified in Setup.

**System cache error - Cache disabled**
RAM cache failed and BIOS disabled the cache. On older boards, check the cache jumpers. You may have to replace the cache. See your dealer. A disabled cache slows system performance considerably.

**CPU ID:**
CPU socket number for Multi-Processor error.

**EISA CMOS not writeable**
ServerBIOS2 test error: Cannot write to EISA CMOS.

**DMA Test Failed**
ServerBIOS2 test error: Cannot write to extended **DMA** (Direct Memory Access) registers.

**Software NMI Failed**
ServerBIOS2 test error: Cannot generate software NMI (Non-Maskable Interrupt).

**Fail-Safe Timer NMI Failed**
ServerBIOS2 test error: Fail-Safe Timer takes too long.

**device Address Conflict**
Address conflict for specified **device.**

**Allocation Error for: device**
Run ISA or EISA Configuration Utility to resolve resource conflict for the specified **device**.

**CD ROM Drive**
CD ROM Drive identified.

**Entering SETUP ...**
Starting Setup program

**Failing Bits: nnnn**
The hex number **nnnn** is a map of the bits at the RAM address which failed the memory test. Each 1 (one) in the map indicates a failed bit. See errors 230, 231, or 232 above for offset address of the failure in System, Extended, or Shadow memory.

**Fixed Disk n**
Fixed disk **n** (0-3) identified.

**Invalid System Configuration Data**
Problem with NVRAM (CMOS) data.

**I/O device IRQ conflict**
I/O device IRQ conflict error.

**PS/2 Mouse Boot Summary Screen:**
PS/2 Mouse installed.

**nnnn kB Extended RAM Passed**
Where **nnnn** is the amount of RAM in kilobytes successfully tested.

**nnnn Cache SRAM Passed**
Where **nnnn** is the amount of system cache in kilobytes successfully tested.

**nnnn kB Shadow RAM Passed**
Where **nnnn** is the amount of shadow RAM in kilobytes successfully tested.

**nnnn kB System RAM Passed**
Where **nnnn** is the amount of system RAM in kilobytes successfully tested.

**One or more I2O Block Storage Devices were excluded from the Setup Boot Menu**
There was not enough room in the IPL table to display all installed I2O block-storage devices.

**Operating system not found**
Operating system cannot be located on either drive A: or drive C:. Enter Setup and see if fixed disk and drive A: are properly identified.

**Parity Check 1 nnnn**
Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????.** Parity is a method for checking errors in binary data. A parity error indicates that some data has been corrupted.

**Parity Check 2 nnnn**

Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????.**

**Press <F1> to resume, <F2> to Setup, <F3> for previous**

Displayed after any recoverable error message. Press <F1> to start the boot process or <F2> to enter Setup and change the settings. Press <F3> to display the previous screen (usually an initialization error of an **Option ROM**, i.e., an add-on card). Write down and follow the information shown on the screen.

**Press <F2> to enter Setup**

Optional message displayed during POST. Can be turned off in Setup.

**PS/2 Mouse:**

PS/2 mouse identified.

**Run the I2O Configuration Utility**

One or more unclaimed block storage devices have the Configuration Request bit set in the LCT. Run an I2O Configuration Utility (e.g. the SAC utility).

**System BIOS shadowed**

System BIOS copied to shadow RAM.

**UMB upper limit segment address: *nnnn***

Displays the address ***nnnn*** of the upper limit of **Upper Memory Blocks**, indicating released segments of the BIOS which can be reclaimed by a virtual memory manager.

**Video BIOS shadowed**

Video BIOS successfully copied to shadow RAM.

# Notes

# Appendix B
# BIOS POST Codes

This section lists the POST (Power On Self Test) codes for the PhoenixBIOS. POST codes are divided into two categories: recoverable and terminal.

## Recoverable POST Errors

When a recoverable type of error occurs during POST, the BIOS will display an POST code that describes the problem. BIOS may also issue one of the following beep codes:

1 long and two short beeps - video configuration error
1 repetitive long beep - no memory detected

## Terminal POST Errors

If a terminal type of error occurs, BIOS will shut down the system. Before doing so, BIOS will write the error to port 80h, attempt to initialize video and write the error in the top left corner of the screen. The following is a list of codes that may be written to port 80h.

| POST Code | Description |
|---|---|
| 01h | IPMI Initialization |
| 02h | Verify Real Mode |
| 03h | Disable Non-Maskable Interrupt (NMI) |
| 04h | Get CPU type |
| 06h | Initialize system hardware |
| 07h | Disable shadow and execute code from the ROM. |
| 08h | Initialize chipset with initial POST values |
| 09h | Set IN POST flag |
| 0Ah | Initialize CPU registers |
| 0Bh | Enable CPU cache |
| 0Ch | Initialize caches to initial POST values |
| 0Eh | Initialize I/O component |
| 0Fh | Initialize the local bus IDE |
| 10h | Initialize Power Management |
| 11h | Load alternate registers with initial POST values |
| 12h | Restore CPU control word during warm boot |
| 13h | Reset PCI Bus Mastering devices |
| 14h | Initialize keyboard controller |
| 16h | 1-2-2-3 BIOS ROM checksum |
| 17h | Initialize cache before memory Auto size |

| POST Code | Description |
|---|---|
| 18h | 8254 timer initialization |
| 1Ah | 8237 DMA controller initialization |
| 1Ch | Reset Programmable Interrupt Controller |
| 20h | 1-3-1-1 Test DRAM refresh |
| 22h | 1-3-1-3 Test 8742 Keyboard Controller |
| 24h | Set ES segment register to 4 GB |
| 28h | Auto size DRAM |
| 29h | Initialize POST Memory Manager |
| 2Ah | Clear 512 kB base RAM |
| 2Ch | 1-3-4-1 RAM failure on address line ***xxxx**** |
| 2Eh | 1-3-4-3 RAM failure on data bits ***xxxx**** of low byte of memory bus |
| 2Fh | Enable cache before system BIOS shadow |
| 32h | Test CPU bus-clock frequency |
| 33h | Initialize Phoenix Dispatch Manager |
| 36h | Warm start shut down |
| 38h | Shadow system BIOS ROM |
| 3Ah | Auto size cache |
| 3Ch | Advanced configuration of chipset registers |
| 3Dh | Load alternate registers with CMOS values |
| 41h | Initialize extended memory for RomPilot (optional) |
| 42h | Initialize interrupt vectors |
| 45h | POST device initialization |
| 46h | 2-1-2-3 Check ROM copyright notice |
| 48h | Check video configuration against CMOS |
| 49h | Initialize PCI bus and devices |
| 4Ah | Initialize all video adapters in system |
| 4Bh | QuietBoot start (optional) |
| 4Ch | Shadow video BIOS ROM |
| 4Eh | Display BIOS copyright notice |
| 4Fh | Initialize MultiBoot |
| 50h | Display CPU type and speed |
| 51h | Initialize EISA board (optional) |
| 52h | Test keyboard |
| 54h | Set key click if enabled |
| 55h | Enable USB devices |
| 58h | 2-2-3-1 Test for unexpected interrupts |
| 59h | Initialize POST display service |
| 5Ah | Display prompt “Press <ESC> to enter SETUP” |
| 5Bh | Disable CPU cache |

| POST Code | Description |
|---|---|
| 5Ch | Test RAM between 512 and 640 kB |
| 60h | Test extended memory |
| 62h | Test extended memory address lines |
| 64h | Jump to UserPatch1 |
| 66h | Configure advanced cache registers |
| 67h | Initialize Multi Processor APIC |
| 68h | Enable external and CPU caches |
| 69h | Setup System Management Mode (SMM) area |
| 6Ah | Display external L2 cache size |
| 6Bh | Load custom defaults (optional) |
| 6Ch | Display shadow-area message |
| 70h | Display error messages |
| 72h | Check for configuration errors |
| 76h | Check for keyboard errors |
| 7Ch | Set up hardware interrupt vectors |
| 7Dh | Initialize Intelligent System Monitoring (optional) |
| 7Eh | Initialize coprocessor if present |
| 80h | Disable onboard Super I/O ports and IRQs (optional) |
| 81h | Late POST device initialization |
| 82h | Detect and install external RS232 ports |
| 83h | Configure non-MCD IDE controllers |
| 84h | Detect and install external parallel ports |
| 85h | Initialize PC-compatible PnP ISA devices |
| 86h | Re-initialize onboard I/O ports. |
| 87h | Configure Motherboard Configurable Devices (optional) |
| 88h | Initialize BIOS Data Area |
| 89h | Enable Non-Maskable Interrupts (NMIs) |
| 8Ah | Initialize Extended BIOS Data Area |
| 8Bh | Test and initialize PS/2 mouse |
| 8Ch | Initialize floppy controller |
| 8Fh | Determine number of ATA drives (optional) |
| 90h | Initialize hard-disk controllers |
| 91h | Initialize local-bus hard-disk controllers |
| 92h | Jump to UserPatch2 |
| 93h | Build MPTABLE for multi-processor boards |
| 95h | Install CD ROM for boot |
| 96h | Clear huge ES segment register |
| 97h | Fix up Multi Processor table |
| 98h | 1-2 Search for option ROMs and shadow if successful. One long, two short beeps on checksum failure |

| POST Code | Description |
|---|---|
| 99h | Check for SMART Drive (optional) |
| 9Ch | Set up Power Management |
| 9Dh | Initialize security engine (optional) |
| 9Eh | Enable hardware interrupts |
| 9Fh | Determine number of ATA and SCSI drives |
| A0h | Set time of day |
| A2h | Check key lock |
| A4h | Initialize typematic rate |
| A8h | Erase <ESC> prompt |
| AAh | Scan for <ESC> key stroke |
| ACh | Enter SETUP |
| AEh | Clear Boot flag |
| B0h | Check for errors |
| B1h | Inform RomPilot about the end of POST (optional) |
| B2h | POST done - prepare to boot operating system |
| B4h | 1 One short beep before boot |
| B5h | Terminate QuietBoot (optional) |
| B6h | Check password (optional) |
| B7h | Initialize ACPI BIOS and PPM Structures |
| B9h | Prepare Boot |
| BAh | Initialize SMBIOS |
| BCh | Clear parity checkers |
| BDh | Display MultiBoot menu |
| BEh | Clear screen (optional) |
| BFh | Check virus and backup reminders |
| C0h | Try to boot with INT 19 |
| C1h | Initialize POST Error Manager (PEM) |
| C2h | Initialize error logging |
| C3h | Initialize error display function |
| C4h | Initialize system error flags |
| C6h | Console redirection init. |
| C7h | Unhook INT 10h if console redirection enabled |
| C8h | Force check (optional) |
| C9h | Extended ROM checksum (optional) |
| CDh | Reclaim console redirection vector |

| POST Code | Description |
|---|---|
| D2h | Unknown interrupt |
| D4h | Check Intel Branding string |
| D8h | Alert Standard Format initialization |
| D9h | Late init for IPMI |
| DEh | Log error if micro-code not updated properly |

**The following are for boot block in Flash ROM**

| POST Code | Description |
|---|---|
| E0h | Initialize the chipset |
| E1h | Initialize the bridge |
| E2h | Initialize the CPU |
| E3h | Initialize system timer |
| E4h | Initialize system I/O |
| E5h | Check force recovery boot |
| E6h | Checksum BIOS ROM |
| E7h | Go to BIOS |
| E8h | Set Huge Segment |
| E9h | Initialize Multi Processor |
| EAh | Initialize OEM special code |
| EBh | Initialize PIC and DMA |
| ECh | Initialize Memory type |
| EDh | Initialize Memory size |
| EEh | Shadow Boot Block |
| EFh | System memory test |
| F0h | Initialize interrupt vectors |
| F1h | Initialize Run Time Clock |
| F2h | Initialize video |
| F3h | Initialize System Management Manager |
| F4h | Output one beep |
| F5h | Clear Huge Segment |
| F6h | Boot to Mini DOS |
| F7h | Boot to Full DOS |

* If the BIOS detects error 2C, 2E, or 30 (base 512K RAM error), it displays an additional word-bitmap (***xxxx***) indicating the address line or bits that failed. For example, “2C 0002” means address line 1 (bit one set) has failed. “2E 1020" means data bits 12 and 5 (bits 12 and 5 set) have failed in the lower 16 bits. The BIOS also sends the bitmap to the port-80 LED display. It first displays the checkpoint code, followed by a delay, the high-order byte, another delay, and then the loworder byte of the error. It repeats this sequence continuously.

# Notes

# Appendix C
# Intel HostRAID Setup Guidelines

After all the hardware has been installed, you must first configure Intel's ESB2 SATA RAID* before you install the Windows Operating System and other software drivers.

**Important Notes to the User:**

*Note 1: If you do not wish to configure onboard SATA RAID functions, please go directly to Section C-2, Appendix D and Appendix E for Operating System & Other Software Installation.

*Note 2: This chapter describes RAID Configuration Instructions for the Intel ESB2 RAID Controller designed for the Windows OS.

## C-1 Introduction to Serial ATA and Parallel ATA

To configure the SATA RAID functions, you must first use the Intel ESB2 SATA RAID Utility program to configure the RAID Level that you desire before installing the Windows XP/2000/2003 operating system and other software drivers. (The necessary drivers are all included on the Supermicro CD that came packaged with your motherboard.) Note that the current version of the ESB2 SATA RAID Utility can only support Windows XP/2000/2003 Operating Systems.

### Serial ATA (SATA)

Serial ATA (SATA) is a physical storage interface that uses a single cable with a minimum of four wires to create a point-to-point connection between devices. It is a serial link, which supports transfer rates up to 3.0 Gbps. Because the serial cables used in SATA are thinner than the traditional cables used in Parallel ATA (PATA), SATA systems have better airflow and can be installed in smaller chassis than Parallel ATA. In addition, the cables used in PATA are limited to a length of 40cm, while Serial ATA cables can be up to one meter in length. Overall, SATA provides better functionality than PATA.

### Introduction to the Intel ESB2 Serial RAID Controller Hub

Located in the South Bridge of the 5000P chipset, the I/O Controller Hub (ESB2) provides the I/O subsystem with access to the rest of the system. It supports an 1-channel UltraATA/100 Bus Master IDE controller (PATA) and six Serial ATA (SATA) ports. The ESB2 supports the following PATA and SATA device configurations: Legacy mode and Native mode.

## The Intel HostRAID Configurations

The following types of Intel's HostRAID configurations are supported:

RAID 0 (Data Striping): this writes data in parallel, interleaved ("striped") sections of two hard drives. Data transfer rate is doubled over using a single disk.

RAID1 (Data Mirroring): an identical data image from one drive is copied to another drive. The second drive must be the same size or larger than the first drive.

RAID 10 (Striping & Mirroring): RAID 0 and 1 schemes are combined (without parity information) to get the benefits of both.

RAID 5: both data and parity information are striped and mirrored across three or more hard drives.

## The Intel Matrix Storage

The Intel Matrix Storage, supported by the ESB2, allows the user to create RAID 0, RAID 1, RAID 10 and RAID 5 sets by using only six identical hard disk drives. The Intel Matrix Storage Technology creates two partitions on each hard disk drive and generate a virtual RAID 0, RAID 1, RAID 10 and RAID 5 sets. It also allows you the change the HDD partition size without any data.

## Configuring BIOS settings for SATA RAID Functions (Native Mode)

1. Press the <Del> key during system bootup to enter the BIOS Setup Utility.

Note: If it is the first time powering on the system, we recommend you load the Optimized Default Settings. If you have already done so, please skip to Step 3.

2. Use the arrow keys to select the "Exit" Settings. Once in the "Exit" settings, Scroll down to select "Load Optimized Default Settings" and press the <Enter> key. Select "OK" to confirm the selection. Press the <Enter> key to load the default settings for the BIOS.

3. Use the arrow keys to select the "Main" section in BIOS.

4. Scroll down to "SATA Controller Mode" and press the <Enter> key to select "Enhanced"

5. Scroll down to "SATA RAID Enabled" and press <Enter>. Then, select "Enabled."

6. Scroll down to "Exit". Select "Save and Exit" from the "Exit" menu. Press the <Enter> key to save the changes and exit the BIOS.

7. Once you've exited the BIOS Utility, the system will re-boot.

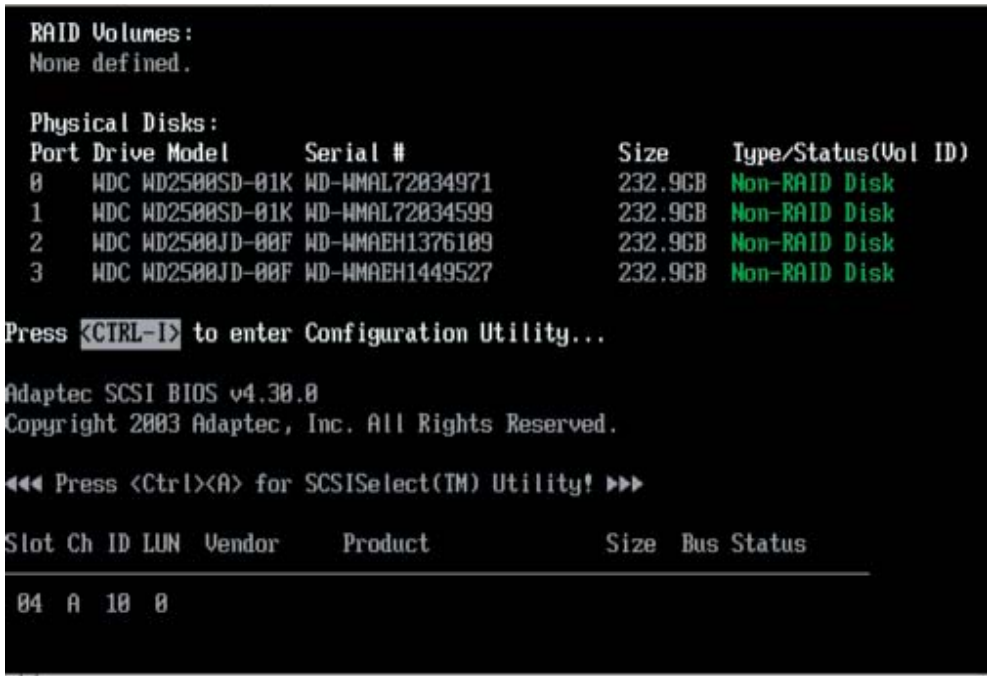
8. During the system boot-up, press the <Ctrl> and <I> keys simultaneously to run the Intel RAID Configuration Utility when prompted by the following message: *Press <Ctrl> <I> for the* Intel *RAID Configuration Utility*.

**(*Note:** The Intel RAID Configuration Utility is only available for systems with two or more drives installed. The Intel RAID Utility screen will not display in systems with one drive installed.)

## Using the Intel ESB2 SATA RAID Utility Program

1. Creating, Deleting and Resetting RAID Volumes:

a. After the system exits from the BIOS Setup Utility, the system will automatically reboot. The following screen appears after Power-On Self Test.

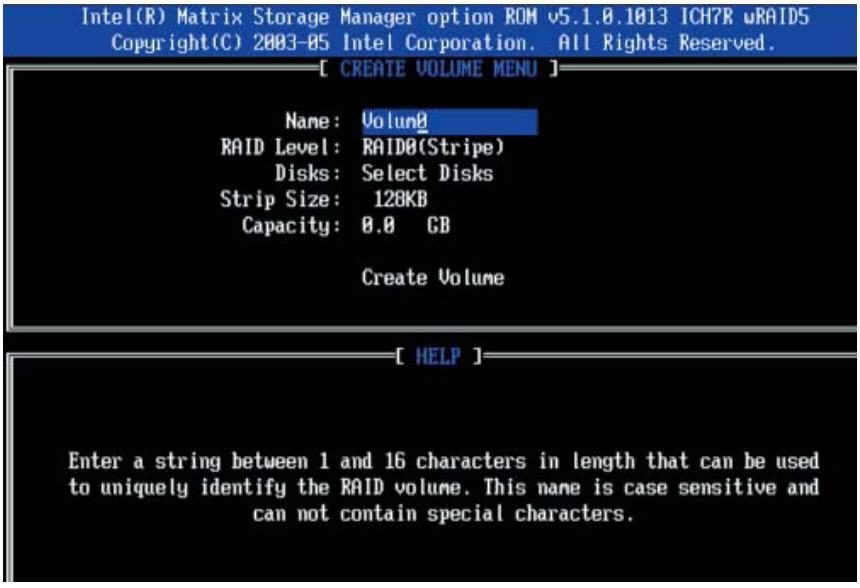

RAID Volumes:
None defined.
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
0 WDC WD2500SD-01K WD-WMAL72034971 232.9GB Non-RAID Disk
1 WDC WD2500SD-01K WD-WMAL72034599 232.9GB Non-RAID Disk
2 WDC WD2500JD-00F WD-WMAEH1376109 232.9GB Non-RAID Disk
3 WDC WD2500JD-00F WD-WMAEH1449527 232.9GB Non-RAID Disk
Press <CTRL-I> to enter Configuration Utility...
Adaptec SCSI BIOS v4.30.0
Copyright 2003 Adaptec, Inc. All Rights Reserved.
<<<< Press <Ctrl><A> for SCSISelect(TM) Utility! >>>>
Slot Ch ID LUN Vendor Product Size Bus Status
04 A 10 0

b. When you see the above screen, press the <Ctrl> and the <I> keys simultaneously to have the main menu of the SATA RAID Utility appear:

(*Note: All graphics and screen shots shown in the manual are for reference only. The screen shots shown in the manual do not imply Supernicro's endorsement or non-endorsement on any 3rd party's product. Your screens may or many not look exactly the same as the graphics shown in this manual.)

## Creating a RAID 0 Volume:

a. Select "Create RAID Volume" from the main menu and press the <Enter> key. The following screen will appear:


Intel(R) Matrix Storage Manager option ROM v5.1.0.1013 ICH7R wRAID5
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.
[ CREATE VOLUME MENU ]
Name: Volun0
RAID Level: RAID0(Stripe)
Disks: Select Disks
Strip Size: 128KB
Capacity: 0.0 GB
Create Volume
[ HELP ]
Enter a string between 1 and 16 characters in length that can be used to uniquely identify the RAID volume. This name is case sensitive and can not contain special characters.

b. Specify a name for the **RAID 0** set and press the <Tab> key or the <Enter> key to go to the next field. (You can use the <Esc> key to select the previous menu.)

c. When RAID Level item is highlighted, press the <Up Arrow>, <Down Arrow> keys to select **RAID 0 (Stripe)** and hit <Enter>.

d. When the Disks item is highlighted, press <Enter> to select the HDD to configure as RAID. The following pop-up screen (*See Note on Page C-3) displays:

[ SELECT DISKS ]
Port Drive Model Serial # Size Status
0 WDC WD2500SD-01KCB0 WD-WMAL72834971 232.9GB Non-RAID Disk
1 WDC WD2500SD-01KCB0 WD-WMAL72834599 232.9GB Non-RAID Disk
2 WDC WD2500JD-00FYB0 WD-WMAEH1376149 232.9GB Non-RAID Disk
3 WDC WD2500JD-00FYB0 WD-WMAEH1449527 232.9GB Non-RAID Disk
Select 2 to 4 disks to use in creating the volume.
[↑↓]-Previous/Next [SPACE]-Selects [ENTER]-Selection Complete

e. Use the <Up Arrow>, <Down Arrow> keys to highlight a drive and press <Space> to select it. A triangle appears to confirm the selection of the drive.

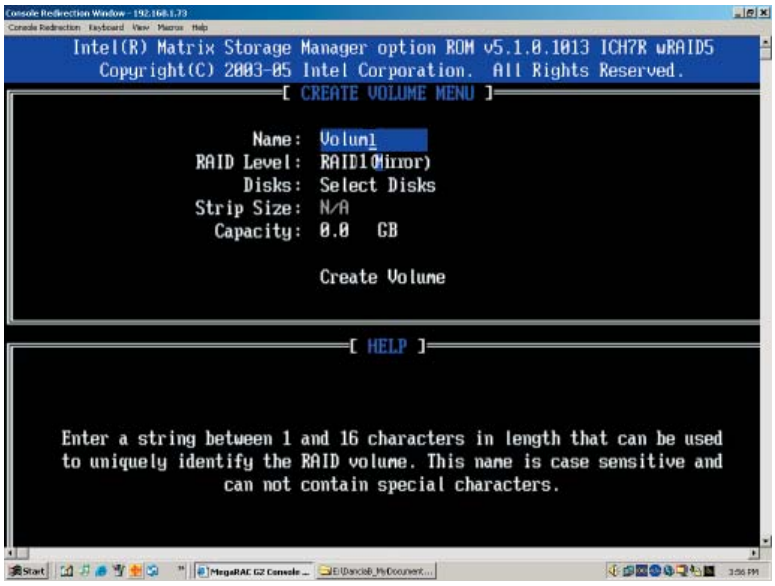
f. Use the <Up Arrow>, <Down Arrow> keys to select the stripe size, ranged from 4 KB to 128 KB for the RAID 0 array, and hit <Enter>. (*Note: For a server, please use a lower stripe size, and for a multimedia system, use a higher stripe size. The default stripe size is 128 KB.)

g. Press <Enter> when the Create Volume item is highlighted. A warning message displays.

h. When asked "Are you sure you want to create this volume (Y/N), press "Y" to create the RAID volume, or type "N" to go back to the Create Volume menu.

## Creating a RAID 1 Volume:

a. Select "Create RAID Volume" from the main menu and press the <Enter> key. The following screen will appear:


Intel(R) Matrix Storage Manager option ROM v5.1.0.1013 ICH7R wRAID5
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.
[ CREATE VOLUME MENU ]
Name: Volun1
RAID Level: RAID1(Mirror)
Disks: Select Disks
Strip Size: N/A
Capacity: 0.0 GB
Create Volume
[ HELP ]
Enter a string between 1 and 16 characters in length that can be used to uniquely identify the RAID volume. This name is case sensitive and can not contain special characters.

b. Specify a name for the **RAID 1** set and press the <Tab> key or the <Enter> key to go to the next field. (You can use the <Esc> key to select the previous menu.)

c. When RAID Level item is highlighted, press the <Up Arrow>, <Down Arrow> keys to select **RAID 1 (Mirror)** and hit <Enter>.

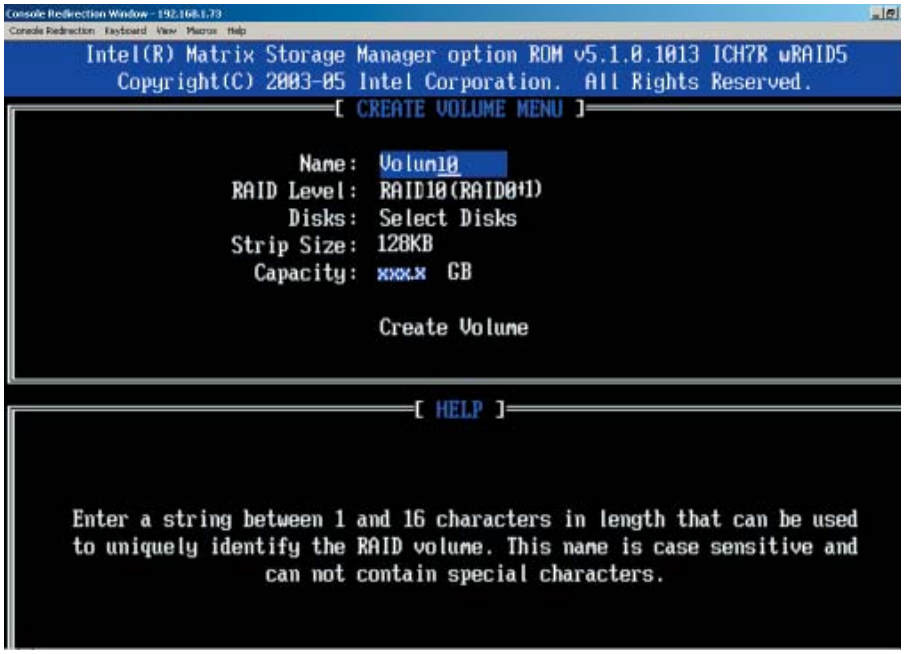
d. When the Capacity item is highlighted, enter your RAID volume capacity and hit <Enter>. The default setting is the maximum capacity allowed.

e. Press <Enter> when the Create Volume item is highlighted. A warning message displays.

f. When asked "Are you sure you want to create this volume (Y/N), press "Y" to create the RAID volume, or type "N" to go back to the Create Volume menu.

## Creating a RAID 10 (RAID 1+ RAID 0):

a. Select "Create RAID Volume" from the main menu and press the <Enter> key. The following screen will appear:


Intel(R) Matrix Storage Manager option ROM v5.1.0.1013 ICH7R wRAID5
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.
[ CREATE VOLUME MENU ]
Name: Volum10
RAID Level: RAID10(RAID0+1)
Disks: Select Disks
Strip Size: 128KB
Capacity: xxx.x GB
Create Volume
[ HELP ]
Enter a string between 1 and 16 characters in length that can be used to uniquely identify the RAID volume. This name is case sensitive and can not contain special characters.

b. Specify a name for the **RAID 10** set and press <Enter>.

c. When RAID Level item is highlighted, use the <Up Arrow>, <Down Arrow> keys to select **RAID 10 (RAID1 + RAID0)** and hit <Enter>.

d. When the Stripe Size is highlighted, use the <Up Arrow>, <Down Arrow> keys to select the stripe size from 4 KB to 128 KB for your RAID 10 and hit <Enter>. The default setting is 64 KB. (*Note: For a server, please use a lower stripe size, and for a multimedia system, use a higher stripe size.)

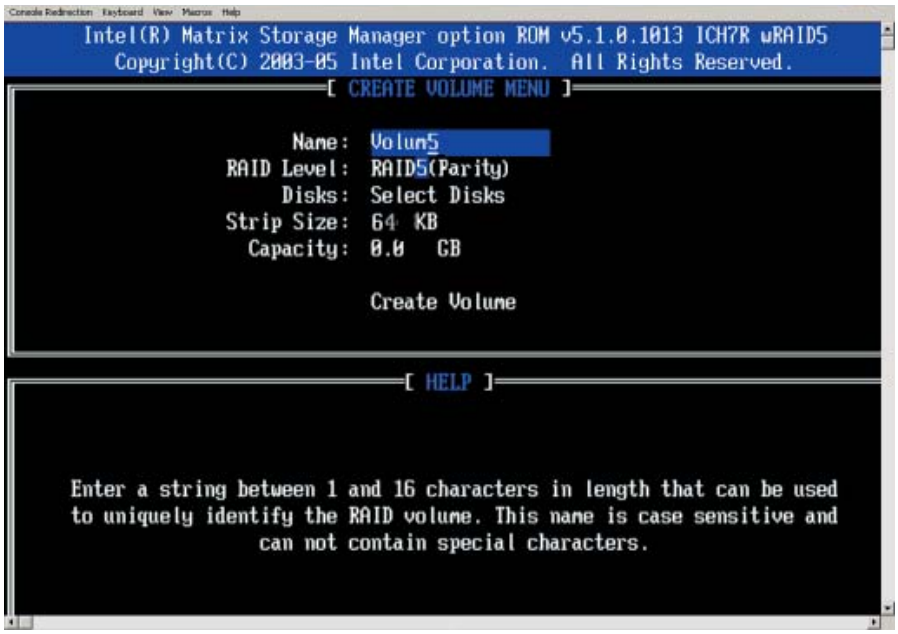
e. When the RAID Volume Capacity item is highlighted, enter your RAID volume capacity and hit <Enter>. The default setting is the maximum capacity allowed.

f. Press <Enter> when the Create Volume item is highlighted. A warning message displays.

g. When asked "Are you sure you want to create this volume (Y/N), press "Y" to create the RAID volume, or type "N" to go back to the Create Volume menu.

## Creating a RAID 5 Set (Parity):

a. Select "Create RAID Volume" from the main menu and press the <Enter> key. The following screen will appear:


Intel(R) Matrix Storage Manager option ROM v5.1.0.1013 ICH7R wRAID5
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.
[ CREATE VOLUME MENU ]
Name: Volun5
RAID Level: RAID5(Parity)
Disks: Select Disks
Strip Size: 64 KB
Capacity: 0.0 GB
Create Volume
[ HELP ]
Enter a string between 1 and 16 characters in length that can be used to uniquely identify the RAID volume. This name is case sensitive and can not contain special characters.

b. Specify a name for the **RAID 5** set and press <Enter>.

c. When the Raid Level is highlighted, use the <Up Arrow>, <Down Arrow> keys to select **RAID 5 (Parity)** and hit <Enter>.

d. When the Disk item is highlighted, press <Enter> to select the HDD to configure as RAID. The following pop-up screen (*See Note on Page C-3) displays:

[ SELECT DISKS ]
Port Drive Model Serial # Size Status
0 WDC WD2500RSD-01KCB0 WD-WMAL72034971 232.9GB Non-RAID Disk
1 WDC WD2500RSD-01KCB0 WD-WMAL72034599 232.9GB Non-RAID Disk
2 WDC WD2500JD-00FYB0 WD-WMAEH1376103 232.9GB Non-RAID Disk
3 WDC WD2500JD-00FYB0 WD-WMAEH1449527 232.9GB Non-RAID Disk
Select 2 to 4 disks to use in creating the volume.
[↑↓]-Previous/Next [SPACE]-Selects [ENTER]-Selection Complete

e. Use the <Up Arrow>, <Down Arrow> keys to highlight a drive and press <Space> to select it. A triangle appears to confirm the selection of the drive.

f. Use the <Up Arrow>, <Down Arrow> keys to select the stripe size, ranged from 4 KB to 128 KB for the RAID 5 array, and hit <Enter>. (*Note: For a server, please use a lower stripe size, and for a multimedia system, use a higher stripe size. The default stripe size is 128 KB.)

g. Enter your desired RAID volume capacity and press <Enter> when the capacity item is highlighted. The default setting is the maximum capacity allowed.

h Press Enter when the Create Volume item is highlighted. A warning message displays.

i. When asked "Are you sure you want to create this volume (Y/N), press "Y" to create the RAID volume, or type "N" to go back to the Create Volume menu.

## Deleting RAID Volume:

(Warning: Be sure to back up your data before deleting a RAID set. You will lose all data on the disk drives when deleting a RAID set.)

a. From the main menu, select item2-Delete RAID Volume, and press <Enter>.

b. Use the <Up Arrow>, <Down Arrow> keys to select the RAID set you want to delete and press <Del>. A Warning message displays.

c. When asked "Are you sure you want to delete this volume (Y/N), press "Y" to delete the RAID volume, or type "N" to go back to the Delete Volume menu.

## Resetting to Non-RAID and Resetting a RAID HDD

(**Warning:** Be cautious when you reset a RAID volume HDD to non-RAID or Resetting a RAID HDD. Resetting a RAID volume HDD or Resetting a RAID HDD will reformat the HDD and delete the internal RAID structure on the drive.)

a. From the main menu, select item3-Reset Disks to Non- RAID, and press <Enter>. The following screen will appear:

Intel(R) Matrix Storage Manager option ROM v5.1.0.1013 ICH7R wRAID5
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.
[ MAIN MENU ]
1. Create RAID Volume
[ RESET RAID DATA ]
Resetting RAID data will remove internal RAID structures
from the selected RAID disks. By removing these structures,
the drive will revert back to a non-RAID disk.
WARNING: Resetting a disk causes all data on the disk to be lost
Port Drive Model Serial # Size Status
1 WDC WD2500SD-01KCB0 WD-WMAL72034599 232.9GB
Select the disks that should be reset.
[↑↓]-Previous/Next [SPACE]-Selects [ENTER]-Selection Complete
[↑↓]-Select [ESC]-Exit [ENTER]-Select Menu

b. Use the <Up Arrow>, <Down Arrow> keys to highlight the RAID set drive to reset and press <Space> to select.

c. Press <Enter> to reset the RAID set drive. A Warning message displays.

d. Press "Y" to reset the drive, or type "N" to go back to the main menu.

## Exiting the Intel Matrix Storage Manager Utility:

a. From the main menu, select item4-Exit, and press <Enter>. A warning message will appear.

b. Press "Y" to reset the drive, or type "N" to go back to the main menu.

# C-2 Installing the Windows XP/2000/2003 for systems with RAID Functions

### New Operating System-Windows XP/2000/2003 Installation

a. Insert Microsoft Windows XP/2000/2003 Setup CD in the CD Driver, and the system will start booting up from CD.

b. Press the <F6> key when the message-" Press F6 if you need to install a third party SCSI or RAID driver" displays.

c. When the Windows XP/2000/2003 Setup screen appears, press "S" to specify additional device(s).

d. Insert the driver diskette-"Intel AA RAID XP/2000/2003 Driver for ESB2 into Drive A: and press the <Enter> key.

e. Choose the Intel(R) ESB2 *SATA RAID Controller* from the list indicated in the XP/2000/2003 Setup Screen, and press the <Enter> key.

f. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.

g. From the Windows XP/2000/2003 Setup screen, press the <Enter> key. The XP/2000/2003 Setup will automatically load all device files and then, continue the Windows XP/2000/2003 installation.

h. After Windows XP/2000/2003 Installation is completed, the system will automatically reboot.

(*Note: the current version of the ESB2 SATA RAID Utility can only support Windows XP/2000/2003 Operating System.)

# Appendix D
# Adaptec HostRAID Setup Guidelines

After all the hardware has been installed, you must first configure the Adaptec Embedded Serial ATA RAID before you install the Windows operating system. The necessary drivers are all included on the Supermicro bootable CDs that came packaged with your motherboard. **Note: The following section provides information on the Adaptec SATA RAID Driver based on the Intel Enterprise South Bridge 2 (ESB2) Controller.*

## D-1 Introduction to the Adaptec Embedded Serial ATA RAID Controller Driver

## Serial ATA (SATA)

Serial ATA(SATA) is a physical storage interface. It uses a single cable with a minimum of four wires to create a point-to-point connection between devices. It is a serial link which supports SATA Transfer rates up to 3.0 Gbps. Because the serial cables used in SATA are thinner than the traditional cables used in Parallel ATA(PATA), SATA systems have better airflow and can be installed in smaller chassis than Parallel ATA. In addition, the cables used in PATA can only extend to 40cm long, while Serial ATA cables can extend up to one meter. Overall, Serial ATA provides better functionality than Parallel ATA.

## Introduction to the Intel ESB2 I/O Controller Hub

Located in the South Bridge of the Intel 5000P Chipset, the ESB2 I/O Controller Hub provides the I/O subsystem with access to the rest of the system. It supports 1-channel Ultra ATA/100 Bus Master IDE controller (PATA) and one Adaptec's Serial ATA (SATA) Host Controller, which support up to six Serial ATA drives, up to two RAID volumes and up to four drives in RAID Configurations. (See the table below for details.)

| *** Adaptec's SATA HostRAID Controller Firmware supports:** | |
|---|---|
| Drives supported | Six |
| Number of RAID Volumes supported | Two |
| Total Drives in RAID Configurations | Four |
| **Examples of Valid RAID Configurations:** | |
| Two drives of RAID 1 + two drives of RAID 0 | |
| Two drives of RAID 1 + two drives of RAID 1 | |
| Three drives of RAID 0 | |
| Four drives of RAID 0 | |
| **Examples of Invalid RAID Configurations:** | |
| Three drives of RAID 0 + two drives of RAID 1 | |
| (***Note**: this table is applicable to Adaptec's HostRAID Controller Firmware only.) | |

## To configure the Adaptec SATA RAID for Operating Systems that support RAID functions(--Windows, Red Hat & SuSe, Linux)

1. Press the <Del> key during system bootup to enter the BIOS Setup Utility.

Note: If it is the first time powering on the system, we recommend you load the Optimized Default Settings. If you have already done so, please skip to Step 3.

2. Use the arrow keys to select the "Exit" Settings. Once in the "Exit" settings, Scroll down to select "Load Optimized Default Settings" and press the <Enter> key. Select "OK" to confirm the selection. Press the <Enter> key to load the default settings for the BIOS.

3. Use the arrow keys to select the "Main" section in BIOS.

4. Scroll down to "SATA Control Mode" and press the <Enter> key to select "Enhanced"

5. Scroll down to "SATA RAID Enabled" and press <Enter>. Then, select "Enabled."

6. Scroll down to "ICH RAID Codebase" and select "Adaptec". Then press <Enter>. (*For ICH RAID Codebase: Change the setting from Intel to Adaptec.)

7. Scroll down to "Exit". Select "Save and Exit" from the "Exit" menu. Press the <Enter> key to save the changes and exit the BIOS.

8. Once you've exited the BIOS Utility, the system will re-boot.

9. During the system boot-up, press the <Ctrl> and <A> keys simultaneously to run the Intel RAID Configuration Utility when prompted by the following message: *Press <Ctrl> <A> for* Intel *RAID Configuration Utility*.

## The Adaptec Embedded Serial ATA with HostRAID Controller Driver

The Adaptec Embedded Serial ATA RAID Controller adds SATA/RAID functionality and performance enhancements to a motherboard. RAID striping (RAID 0) allows data to be written across multiple drives, greatly improving hard disk I/O performance. RAID mirroring (RAID 1) allows data to be simultaneously written to two drives, improving data security even if a single hard disk fails. A Stripe of Mirrors (RAID 10) provides multiple RAID 1 mirrors and a RAID 0 stripe, maximizing data security and system efficiency. By incorporating the Adaptec Embedded Serial ATA into the motherboard design, Supermicro's X7DBR-8+/X7DBR-i+ offers the user the benefits of SATARAID without the high costs associated with hardware RAID applications.

## Using the Adaptec RAID Configuration Utility (ARC)

The Adaptec RAID Configuration Utility, an embedded BIOS Utility, includes the following:

*Array Configuration Utility: Use this utility to create, configure and manage arrays.

* Disk Utilities: Use this option to format or verify disks.

To run the Adaptec RAID Configuration Utility, you will need to do the following:

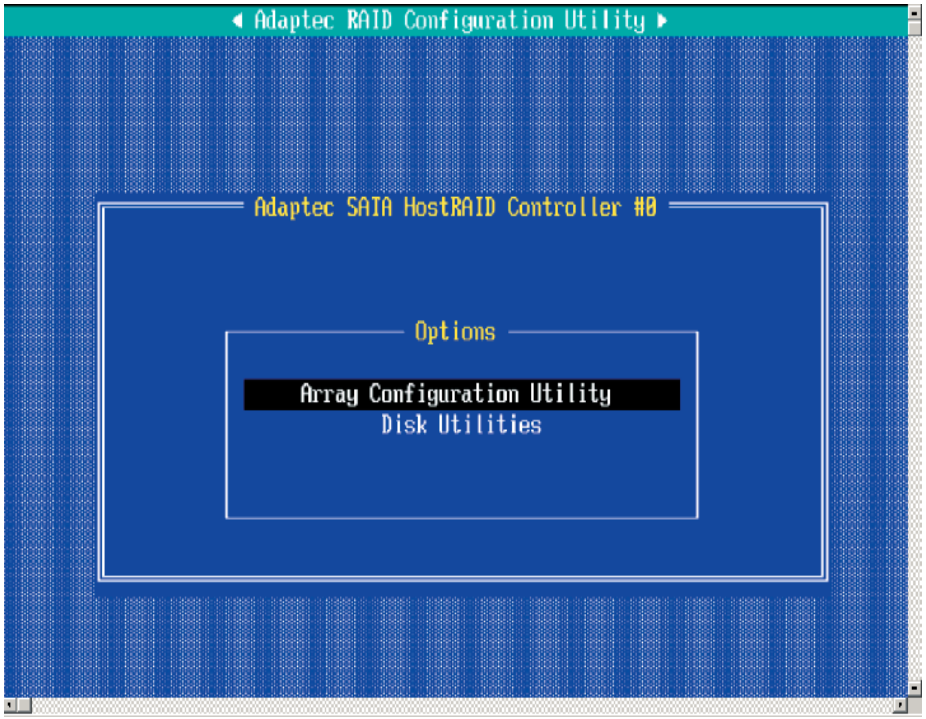
1. Enable RAID functions in the system BIOS (refer to Chapter 4 for System BIOS Configurations).

2. Press the <Ctrl> and <A> keys simultaneously when prompted to do so during system boot. (Refer to the previous page for detailed instructions.)

### A. Using the Array Configuration Utility (ACU)

When you press <Ctrl> and <A> keys simultaneously at the prompt during system bootup, the main menu will appear.

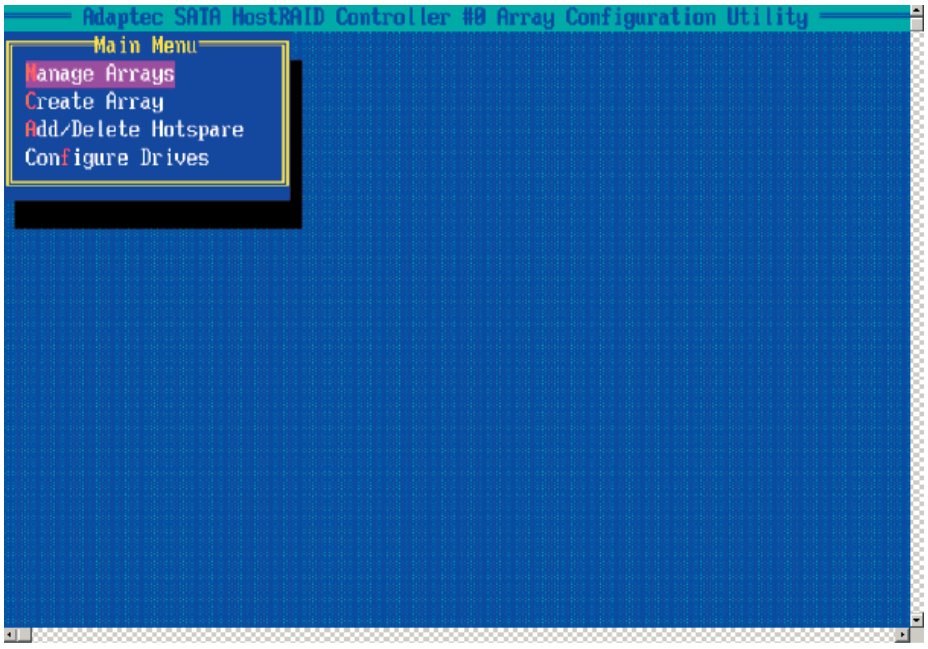
**(*Note:** To select an option, use the arrow keys to highlight the item and then press the <Enter> key to select it. To return to the previous menu, press the <ESC> key. Press the <Insert> key to select a drive. When a drive is highlighted (selected), press the <Delete> key to de-select it.)




## Managing Arrays

Select this option to view array properties, and configure array settings.

To select this option, using the arrow keys and the <enter> key, select "Managing Arrays" from the main menu as shown above.



## Configuring Disk Drives

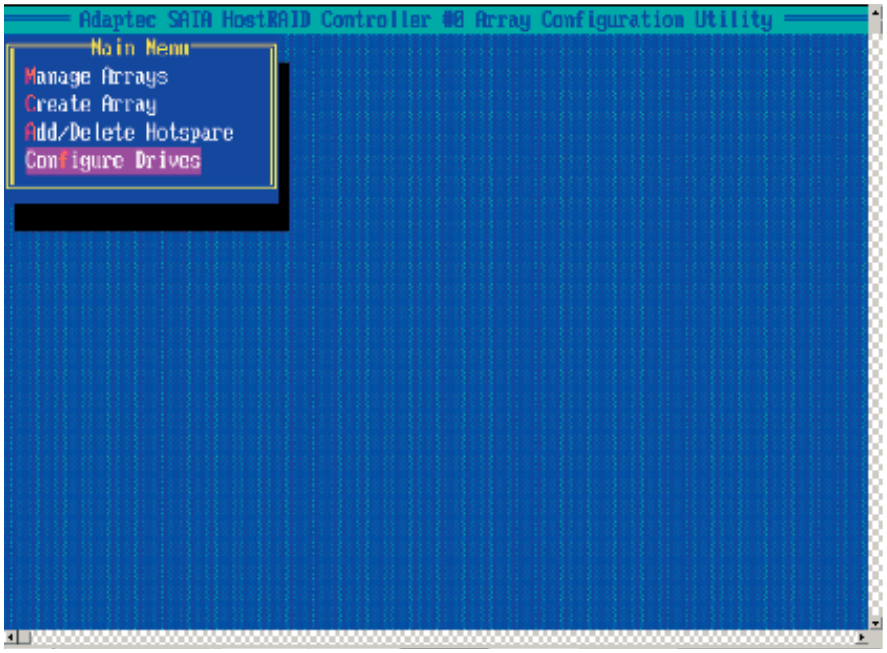
You may need to configure a disk drive before you can use it.

**Caution:** Configuring a disk may overwrite the partition table on the disk and may make any data on the disk inaccessible. If the drive is used in an array, you may not be able to use the array again.

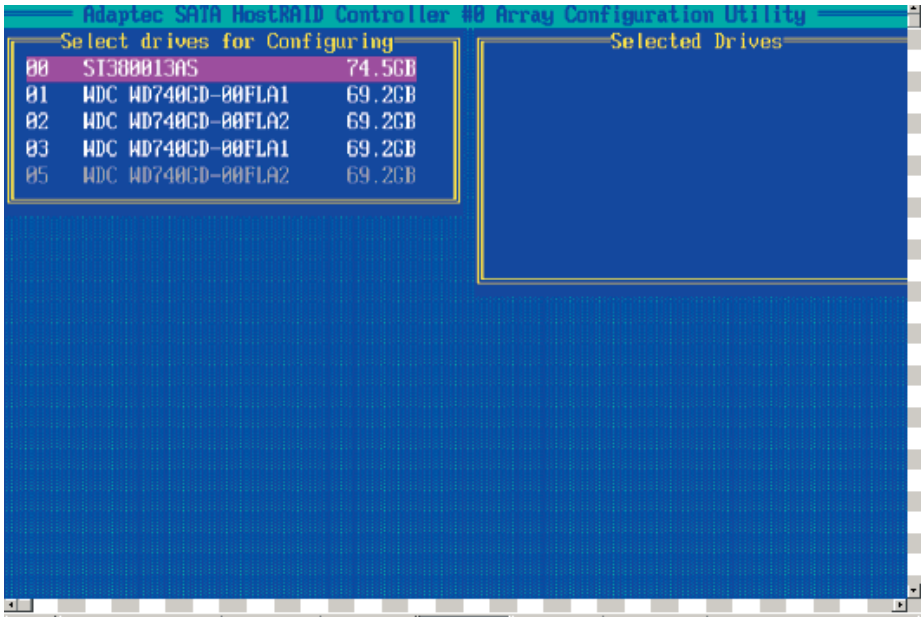
***Do not configure*** a disk that is part of a boot array. To determine which disks are associated with a particular array, please refer to *Viewing Array Properties.*

**To configure a disk drive:**

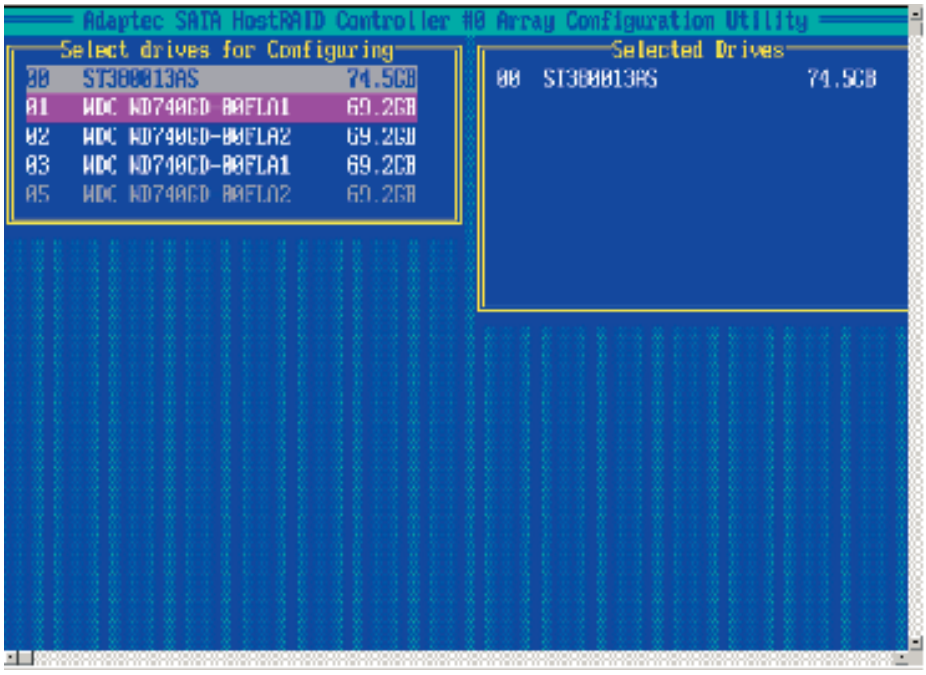
**1.** From the main menu (shown on Page D-4), select **Configure Drives** and hit <**Enter**> (as shown below.)



**2.** From the "Select Drives for Configuring" List (shown below,) select the drives you want to configure and press <**Insert**>.

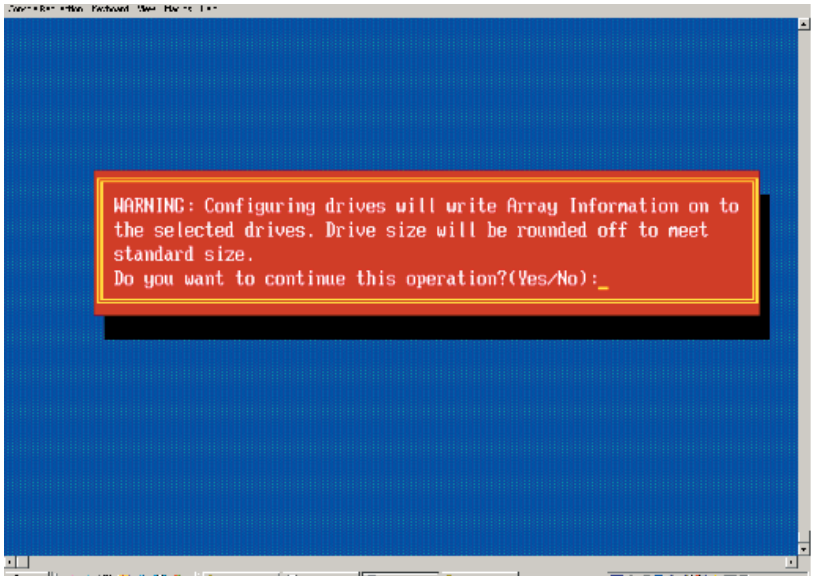

Adaptec SATA HostRAID Controller #0 Array Configuration Utility
Select drives for Configuring
00 ST380013AS 74.5GB
01 WDC WD740GD-00FLA1 69.2GB
02 WDC WD740GD-00FLA2 69.2GB
03 WDC WD740GD-00FLA1 69.2GB
05 WDC WD740GD-00FLA2 69.2GB
Selected Drives

**3.** The drive you've selected will appear in the "Selected Drives Dialog Box" on the right (as shown below.) Repeat the same steps until all drives that you want to configure appear in the selected drives box.


Adaptec SATA HostRAID Controller #0 Array Configuration Utility
Select drives for Configuring
00 ST380013AS 74.5GB
01 WDC WD740GD-00FLA1 69.2GB
02 WDC WD740GD-00FLA2 69.2GB
03 WDC WD740GD-00FLA1 69.2GB
05 WDC WD740GD-00FLA2 69.2GB
Selected Drives
00 ST380013AS 74.5GB

**4.** Once both drives display in the selected drive box, press <**Enter**.>

**5.** Read the warning message as shown in the screen below.


WARNING: Configuring drives will write Array Information on to
the selected drives. Drive size will be rounded off to meet
standard size.
Do you want to continue this operation?(Yes/No):_

**6.** Make sure that you have selected the correct disk drives to configure. If correct, type **Y** to continue.

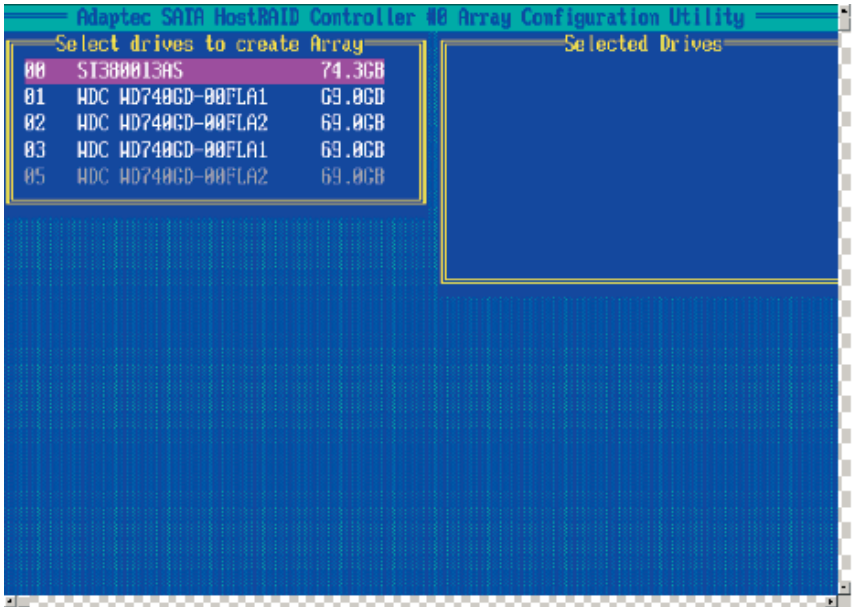
## Creating Arrays

Before you create arrays, make sure that the disks for the array are connected and installed in your system. Note that disks with no usable space, or disks that are un-initialized or not formatted are shown in gray and cannot be used. (***Note**: It is recommended that you configure devices before you create arrays.)

**To create an array:**

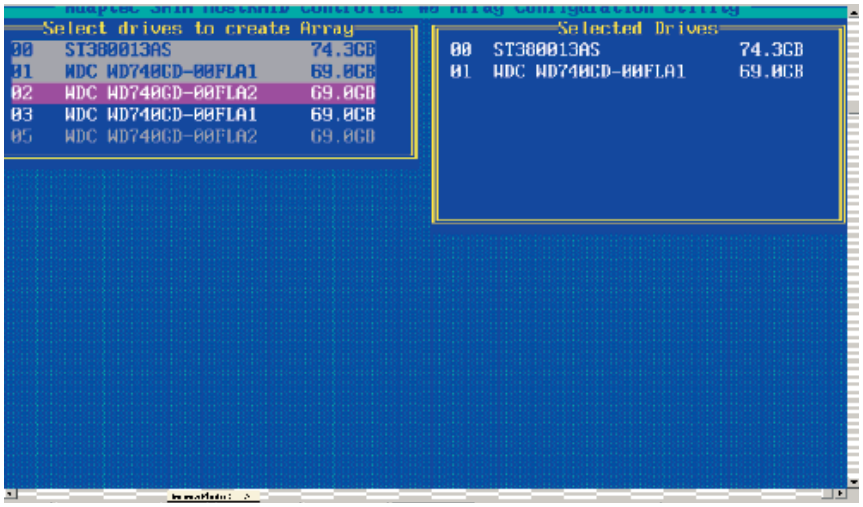
**1.** From the main menu (shown on page D-4), select **Create Array**.

**2.** Select the disks for the new array and press Insert (as the screen shown below). **(*Note:** To de-select any disk, highlight the disk and press **Delete**.)


Adaptec SATA HostRAID Controller #0 Array Configuration Utility
Select drives to create Array
Selected Drives
00 ST380013AS 74.3GB
01 WDC WD740GD-00FLA1 69.0GD
02 WDC WD740GD-00FLA2 69.0GB
03 WDC WD740GD-00FLA1 69.0GB
05 WDC WD740GD-00FLA2 69.0GB

**3.** The arrays you have selected will appear on the Selected Drives dialog box on the right (as shown below.)

**4** Press **Enter** when both disks for the new array are selected. The Array Properties menu displays.



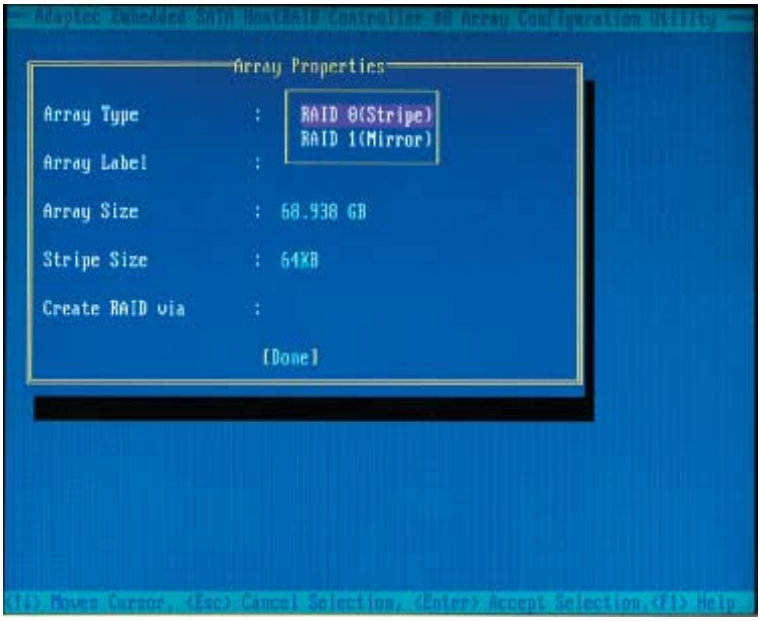
### Assigning Array Properties

Once a new array is completed, you can assign properties to the array.

***Caution:** Once the array is created and its properties are assigned, and you cannot change the array properties using this utility.

To assign properties to the new array:

**1.** In the Array Properties menu (as shown in the screen below), select an array type and press **Enter**. Only the available array types will be displayed on the screen. (*RAID 0 or RAID 1 requires two drives.)




**2.** Under the item "**Arrays Label**", type in a label and press <**Enter>**. (***Note:** The label shall not be more than 15 characters.)

**3.** For RAID 0, select the desired stripe size. (*Note: Available stripe sizes are 16, 32, and 64 KB. 64K is default. Please *do not* change the default setting.)

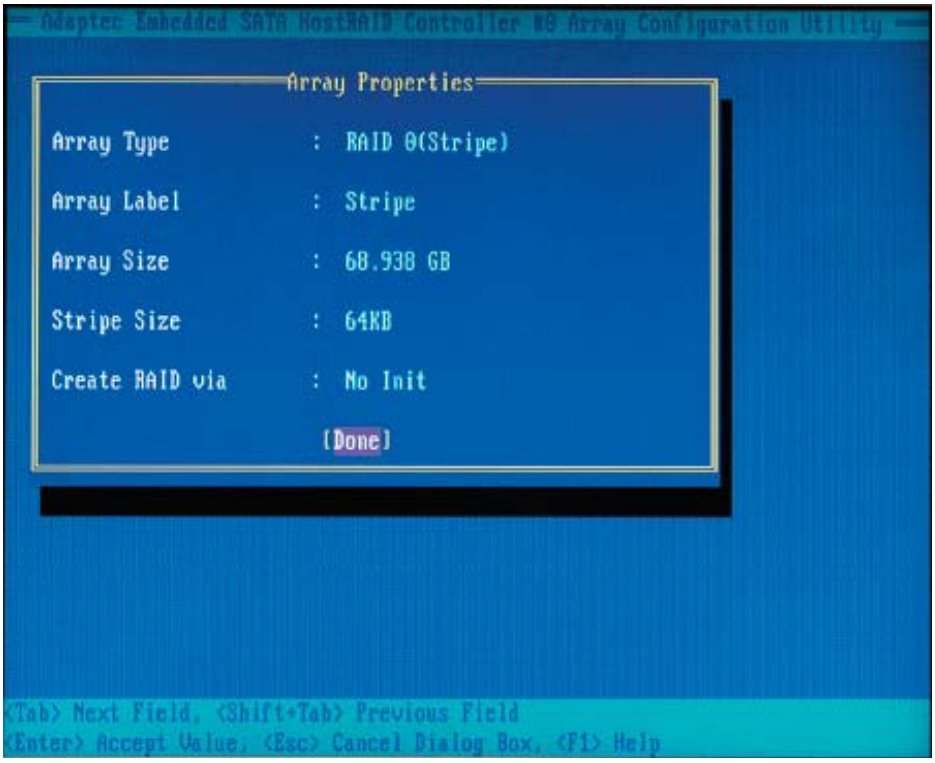
**4.** The item: **"Create RAID via"** allows you to select between the different ways of creating methods for RAID 0 and RAID 1.

The following table gives examples of when each is appropriate.

| Raid Level | Create Via | When Appropriate |
|---|---|---|
| RAID 0 | Quick Init | Creating a RAID 0 on new drives |
| RAID 0 | Migrate* | Creating a RAID 0 from one new drive and one drive with data you wish to preserve |
| RAID 1 | Build* | Any time you wish to create a RAID 1, but especially if you have data on one drive that you wish to preserve |
| RAID 1, RAID 10 | Clear | Creating a RAID 1 or RAID 10 on new drives, or when you want to ensure that the array contains no data after creation. |
| RAID 1, RAID 10 | Quick Init | Fastest way to create a RAID 1 or RAID 10 Appropriate when using new drives |

**(*Note:** If you select Migrate for RAID 0, or Build for RAID 1, you will be asked to select the source drive. The contents of the source drive will be preserved. However, the data on the new drive will be lost.)

**5.** When you are finished, press **<Done>** (as the screen shown below).


Adaptec Embedded SATA HostRAID Controller #0 Array Configuration Utility
Array Properties
Array Type : RAID 0(Stripe)
Array Label : Stripe
Array Size : 68.938 GB
Stripe Size : 64KB
Create RAID via : No Init
[Done]
<Tab> Next Field, <Shift+Tab> Previous Field
<Enter> Accept Value, <Esc> Cancel Dialog Box, <F1> Help

**Notes:**

1. Before adding a new drive to an array, be sure to back up any data stored on the new drive; otherwise, all data will be lost.

2. If you stop the Build or Clear process on a RAID 1, you can restart it by pressing <Ctrl> and <R>.

3. If you've used the Quick Init option to create a RAID1, it may return some data mis-comparison when you run a consistency check at a later time. This is normal.

4. The Adaptec Host RAID allows you to use drives of different sizes in a RAID. However, you can only select a smaller drive as the source or first drive during a build operation.

5. When migrating from single volume to RAID 0, migrating from a larger drive to a smaller drive is allowed. However, the destination drive must be at least half the capacity of the source drive.

6. It is not recommended that you migrate or build an array on Windows dynamic disks (volumes) because it will result in data loss.

**Warning**: Do not interrupt the process when you create a RAID 0 using the Migrate option. If you do, you will not be able to restart the system, or to recover the data that was on the source drive.

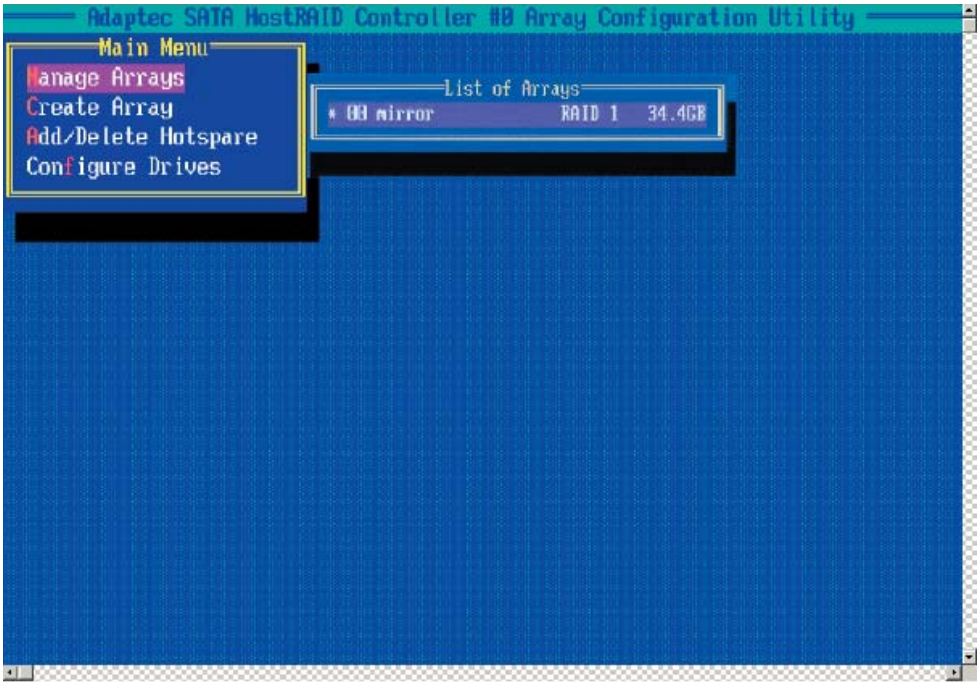
### Adding a Bootable Array

To make an array bootable:

**1.** From the Main menu, select **Manage Arrays.**

**2.** From the List of Arrays, select the array you want to make bootable, and press <**Ctrl>** and **<B>.**

**3.** Enter Y to create a bootable array when the following message is displayed: "This will make all other existing bootable array non-bootable. Do you want to make this array bootable? (Yes/No):" Then, a bootable array will be created. An asterisk (*) will appear next to the bootable array (as shown in the picture below:)




### Deleting a Bootable Array

To delete a bootable array:

**1.** From the Main menu, select **Manage Arrays.**

**2.** From the List of Arrays, select the bootable array you want to delete, and press <**Ctrl>** and **<B>**. Note: a bootable array is the array marked with an asterisk * (as shown in the picture above.)

**3.** When the following message is displayed: "The array is already marked bootable. Do you want to make this array as not bootable? (Yes/No)," Enter Y to delete a bootable array. The bootable array will be deleted and the asterisk will disappear.

**(*Note: Do not use the delete key to delete the bootable array.)**

**Adding/Deleting Hotspares**

To add a Hotspare:

(*Note: In order to rebuild a RAID (RAID 0 or RAID 1), you would need to add a new HDD as a hotspare.)

1. From the main menu (shown on Page D-4), select Add/Delete Hotspares.

4. Use the up and down arrow keys to highlight and select the disk you want to designate as a hotspare, and press <Insert>, and then, press <**Enter**>.

5. Press **Yes** when the following prompt is displayed:

"Do you want to create spare?" (Yes/No?)

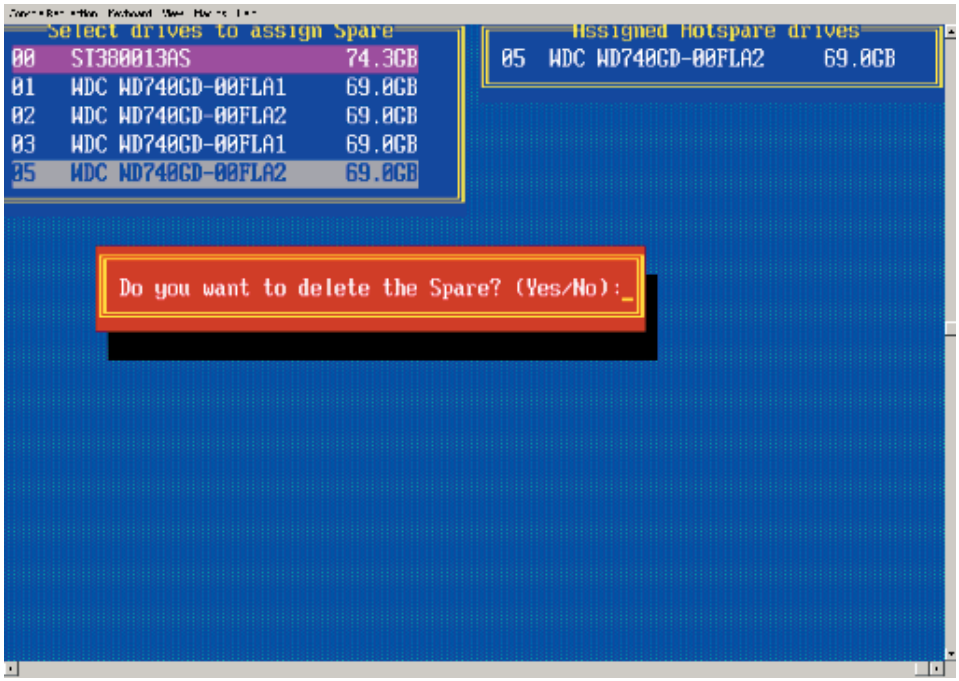
The spare you have selected will appear in the Selected drives Menu.

To delete a Hotspare:

1. From the main menu (shown on Page D-4), select Add/Delete Hotspares.

2. Use the up and down arrow keys to highlight and select the Hotspare you want to delete, and press <delete>, and then, press <Enter>.

3. When the following warning is displayed: "Do you want to delete the hot spare?" (Yes/No?), press **Yes** to delete the hotspare you have selected.


Select drives to assign Spare
00 ST380013AS 74.3GB
01 WDC WD740GD-00FLA1 69.0GB
02 WDC WD740GD-00FLA2 69.0GB
03 WDC WD740GD-00FLA1 69.0GB
05 WDC WD740GD-00FLA2 69.0GB
Assigned Hotspare drives
05 WDC WD740GD-00FLA2 69.0GB
Do you want to delete the Spare? (Yes/No):

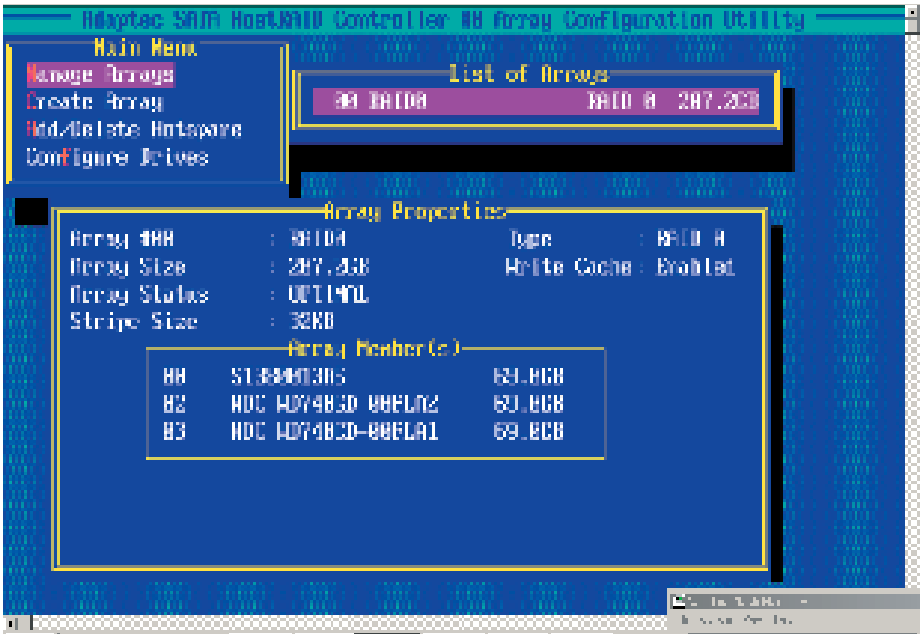
## Viewing Array Properties

To view the properties of an existing array:

**1.** From the main menu, select **Manage Arrays** and hit <Enter> (as shown on the previous page.)

**2.** From the List of Arrays dialog box (shown below), select the array you want to view and press **Enter**.

The Array Properties dialog box appears (as shown below), showing detailed information on the array. The physical disks associated with the array are displayed here.




**3.** Press **Esc** to return to the previous menu.

## Rebuilding Arrays

***Note 1:** Rebuilding applies to Fault Tolerant array (RAID 1) only.

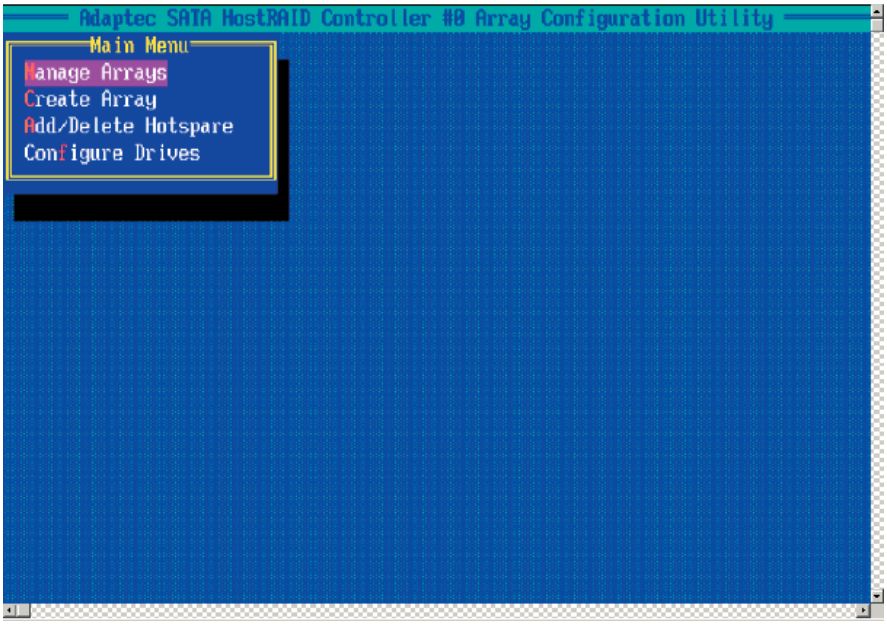
If an array Build process is interrupted or when one critical member is missing, you must perform a Rebuild to restore its functionality. For a critical array rebuild operation, the optimal drive is the source drive.

***Note 2:** If no spare array exists and a hard disk drive fails, you need to create a spare before you can rebuild an array.

**To Rebuild an array:**

**1** From the Main Menu, select **Manage Arrays** (as shown in the screen below). From the List of Arrays, select the array you want to Rebuild.

**2** Press <**Ctrl**> and **<R>** to rebuild.



**Deleting Arrays**

**Warning: Back up the data on an array before you delete it to prevent data loss Deleted arrays cannot be restored.*

To delete an existing array:

**1.** From the main menu (shown on Page D-4), select **Manage Arrays**.

**2.** Select the array you wish to delete and press <de**lete**>.

**3.** In the Array Properties dialog box, select **Delete** and press <**Enter>**. The following prompt is displayed:
**Warning!! Deleting the array will render array unusable. Do you want to delete the array? (Yes/No):*

***RAID 1 only*—the following prompt is also displayed:**

*Deleting the partition will result in data loss! Do you also want to delete the partition? (Yes/No):*

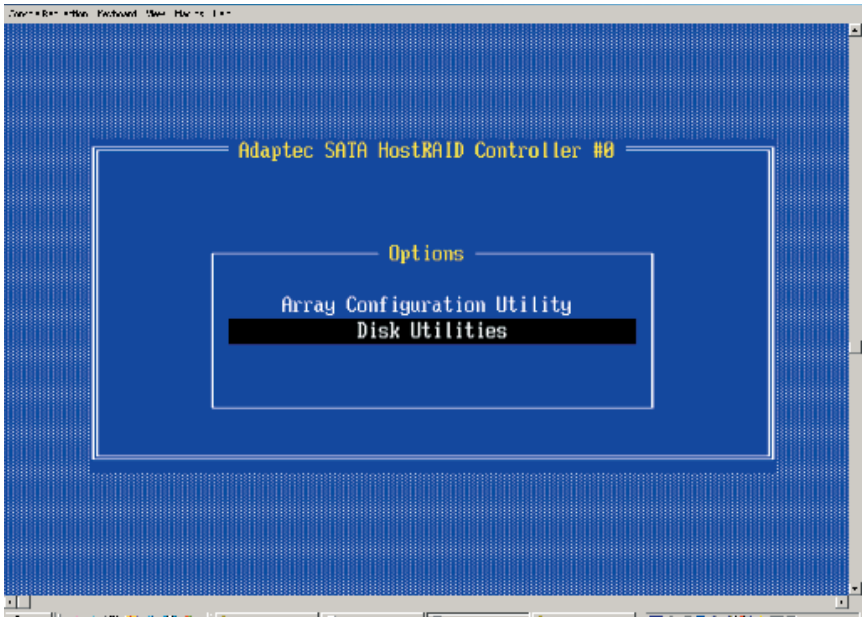
**4.** Press **Yes** to delete the array and partition or **No** to return to the previous menu.

**5.** Press **Esc** to return to the previous menu.

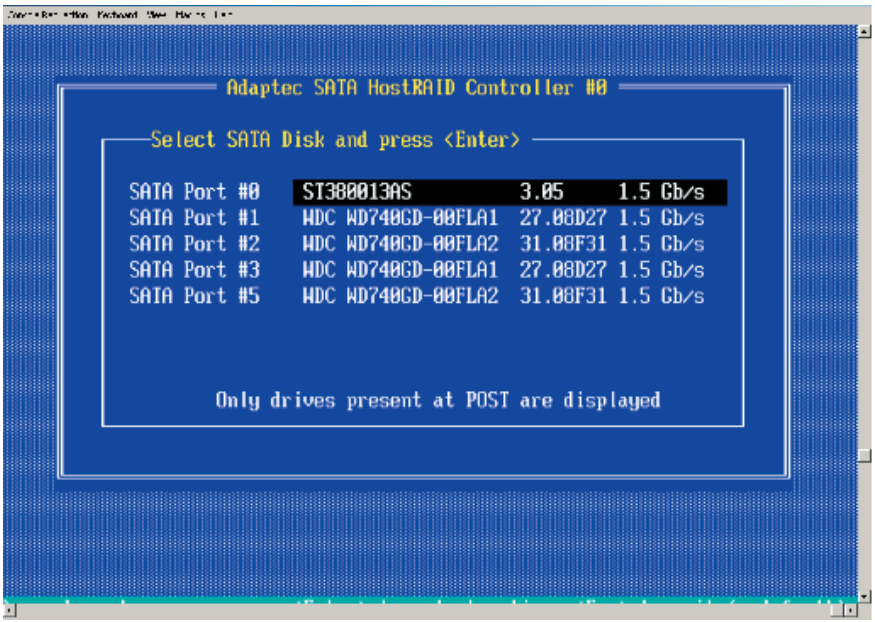
## Using the Disk Utilities

The Disk Utilities enable you to format or verify the media of your Serial ATA hard disks.

**To access the disk utilities:**




**1.** From the Adaptec RAID Configuration Utility Menu, select **Disk Utilities** (as shown above) and press **<Enter>.** The following screen appears.

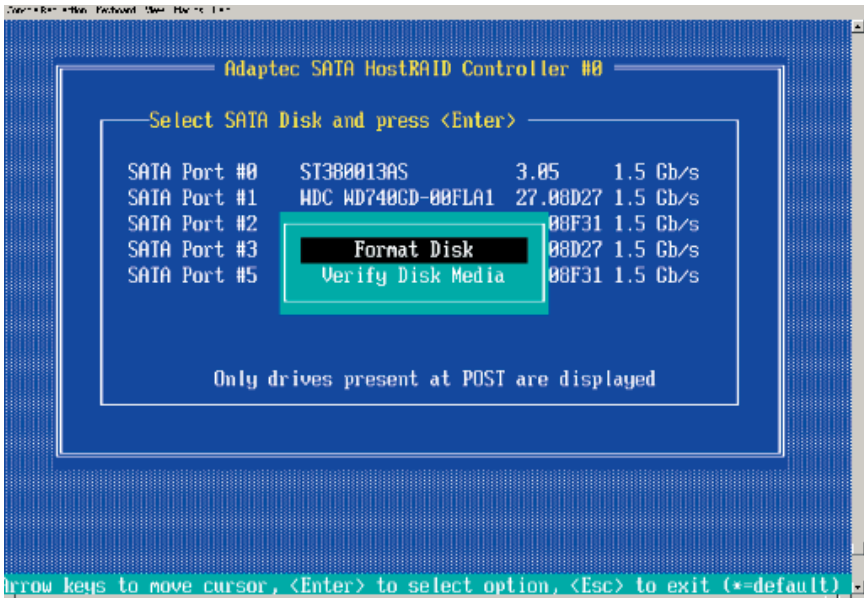

Adaptec SATA HostRAID Controller #0
Select SATA Disk and press <Enter>
SATA Port #0 ST380013AS 3.05 1.5 Gb/s
SATA Port #1 WDC WD740GD-00FLA1 27.00D27 1.5 Gb/s
SATA Port #2 WDC WD740GD-00FLA2 31.00F31 1.5 Gb/s
SATA Port #3 WDC WD740GD-00FLA1 27.00D27 1.5 Gb/s
SATA Port #5 WDC WD740GD-00FLA2 31.00F31 1.5 Gb/s
Only drives present at POST are displayed

**2.** Select the desired disk and press **<Enter>**. The following screen appears:

**To format a disk:**

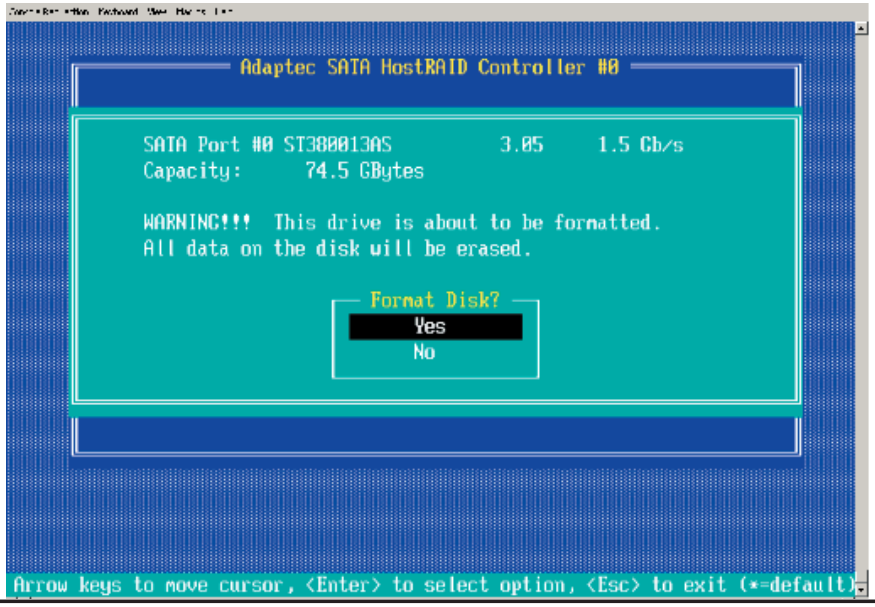
***Note:** The operation of **Formatting Disk** allows you to perform a low-level formatting of a hard drive by writing zeros to the entire disk. Serial ATA drives are low-level formatted at the factory and do not need to be low-level formatted again.

**3** When the screen shown below displays, select **Format Disk** and press **<Enter>**. The following screen appears:

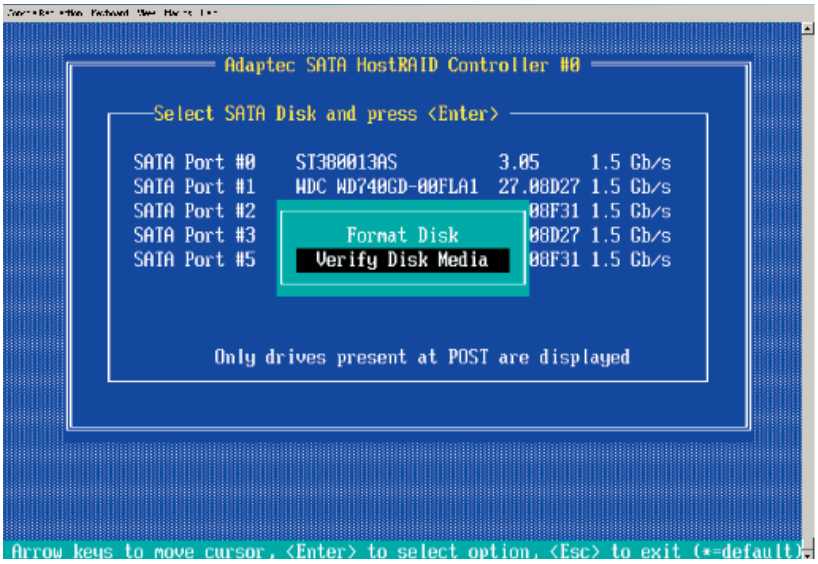

Adaptec SATA HostRAID Controller #0
Select SATA Disk and press <Enter>
SATA Port #0 ST380013AS 3.05 1.5 Gb/s
SATA Port #1 WDC WD740GD-00FLA1 27.00D27 1.5 Gb/s
SATA Port #2 00F31 1.5 Gb/s
SATA Port #3 00D27 1.5 Gb/s
SATA Port #5 00F31 1.5 Gb/s
Format Disk
Verify Disk Media
Only drives present at POST are displayed
Arrow keys to move cursor, <Enter> to select option, <Esc> to exit (*=default)

**4** Read the warning message when it appears in the screen as shown below. To continue with disk formatting, select **Yes** and hit **<Enter>.** Otherwise, select **No** and press **<Enter>**.

**(*Caution:** Formatting a disk destroys all data on the drive. Be sure to back up your data before formatting a disk.)

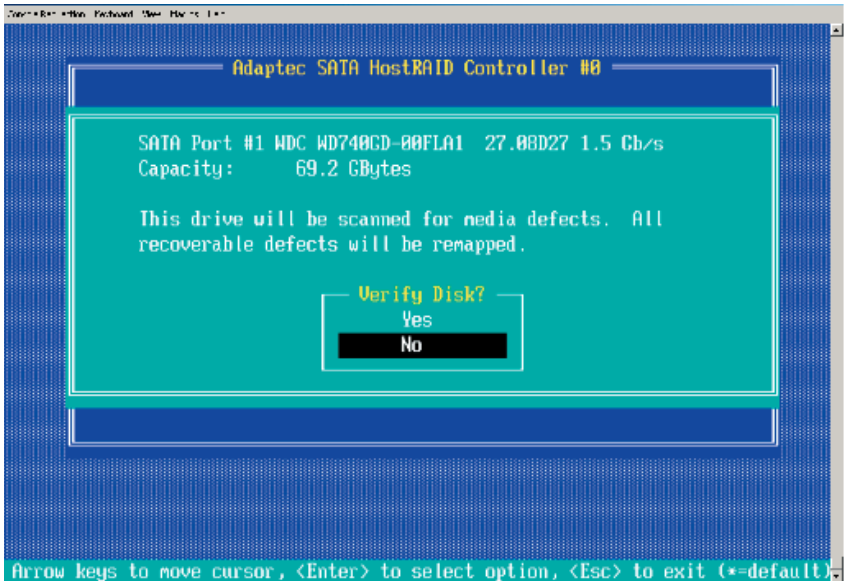

Adaptec SATA HostRAID Controller #0
SATA Port #0 ST380013AS 3.05 1.5 Gb/s
Capacity: 74.5 GBytes
WARNING!!! This drive is about to be formatted.
All data on the disk will be erased.
Format Disk?
Yes
No
Arrow keys to move cursor, <Enter> to select option, <Esc> to exit (*=default)

**To verify disk media:**


Adaptec SATA HostRAID Controller #0
Select SATA Disk and press <Enter>
SATA Port #0 ST380013AS 3.05 1.5 Gb/s
SATA Port #1 WDC WD740GD-00FLA1 27.08D27 1.5 Gb/s
SATA Port #2 08F31 1.5 Gb/s
SATA Port #3 08D27 1.5 Gb/s
SATA Port #5 08F31 1.5 Gb/s
Format Disk
Verify Disk Media
Only drives present at POST are displayed
Arrow keys to move cursor, <Enter> to select option, <Esc> to exit (*=default)

**3** When the screen shown above displays, select **Verify Disk Media** and press **<Enter>**.

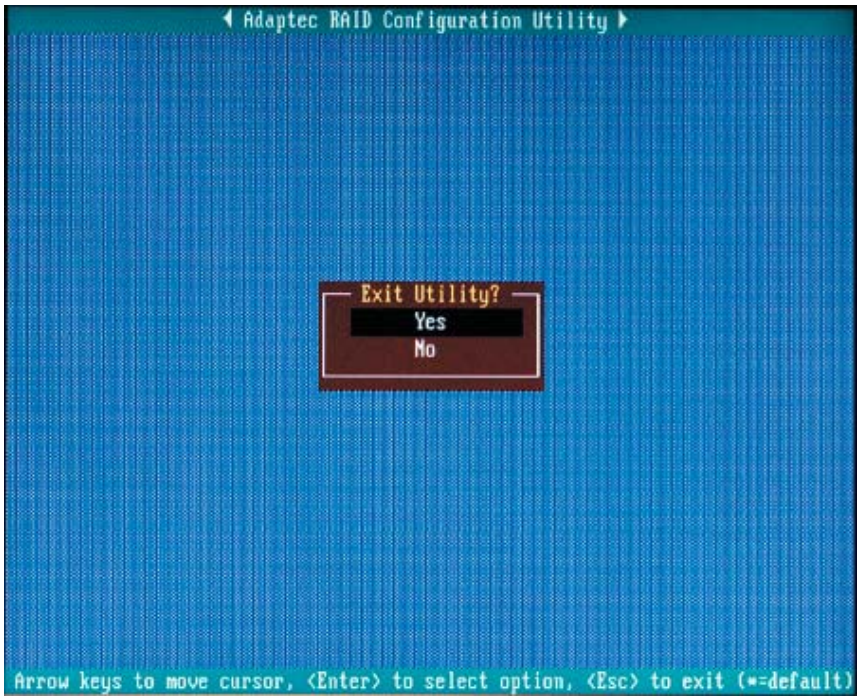
**4** A message will display, indicating that the selected drive will be scanned for media defects. Select **Yes** and hit **<Enter>** to proceed with disk verifying; otherwise, select **No and** hit **<Enter>.**


Adaptec SATA HostRAID Controller #0
SATA Port #1 WDC WD740GD-00FLA1 27.08D27 1.5 Gb/s
Capacity: 69.2 GBytes
This drive will be scanned for media defects. All recoverable defects will be remapped.
Verify Disk?
Yes
No
Arrow keys to move cursor, <Enter> to select option, <Esc> to exit (*=default)

**To Exit Adaptec RAID Configuration Utility**

**1.** Once you have completed RAID array configurations, press **ESC** to exit. The following screen will appear.

**2.** Press **Yes** to exit the Utility.



## D-2 Installing Intel's ESB2 Driver by Adaptec and Installing the OS

a. Insert Supermicro's bootable CD that came with the package into the CD Drive during the system reboot, and the screen: "Super Micro Driver Diskette Maker" will appear.

b. Choose from the list the item: "Intel ESB2 Driver by 3rd Party (Adaptec)" and press <**ENTER**>.

c. From the next screen displayed, choose the OS driver you want to install and press <**Enter**>.

d. Insert a formatted diskette into drive A: and press <**Enter**> as prompted.

e. Exit the program after the process is completed. Then, reboot the system.

f. Insert the Microsoft Windows OS Setup CD in the CD Driver, and the system will start to boot up from CD.

g. Press the <**F6**> key when the message-"Press F6 if you need to install a third party SCSI or RAID driver" displays.

h. When the Windows OS Setup screen appears, press "**S**" to specify additional device(s).

i. Insert the driver diskette-"Adaptec Embedded Serial ATA Raid Controller Driver" into Drive A: and press the <**Enter**> key.

j. Choose The Adaptec Embedded Host Serial ATA Raid Controller from the list indicated in the Windows OS Setup Screen, and press the <**Enter**> key.

k. Press the <**Enter**> key to continue the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <**Enter**> key to continue with the installation.

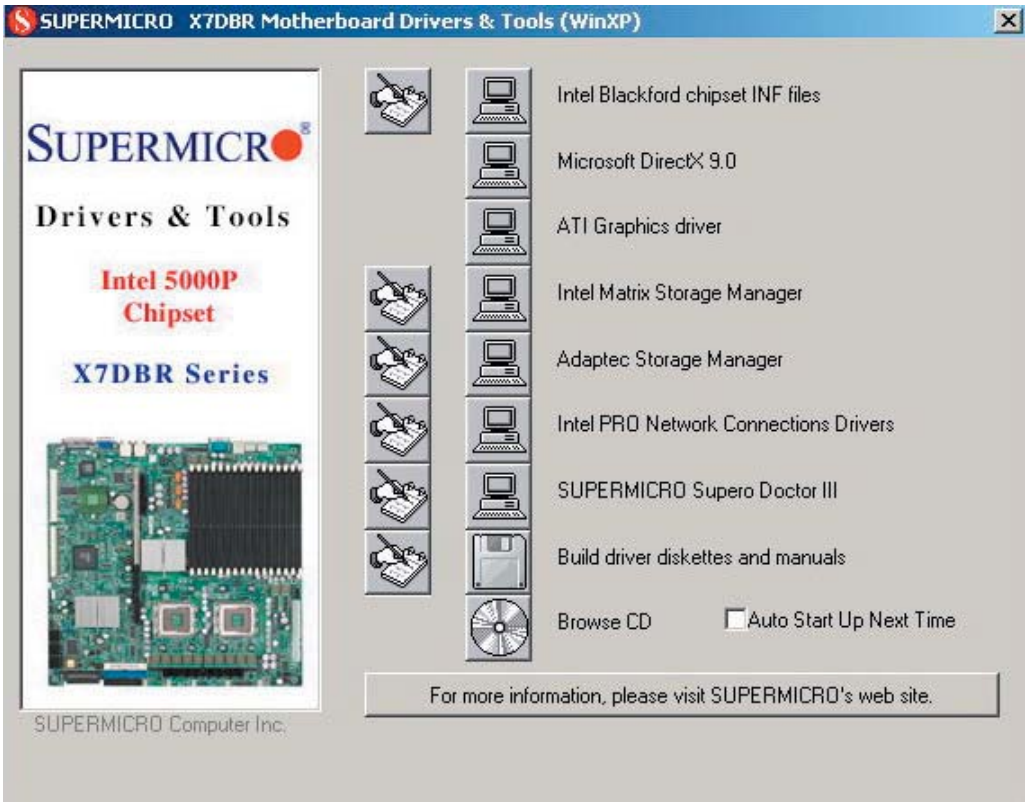
l. From the Windows OS Setup screen, press <**Enter**>. The OS Setup will automatically load all device files, and, then, continue with the Windows OS installation.

m. After Windows OS Installation is completed, the system will automatically reboot.

# Appendix E
# Installing Other Software Programs and Drivers

## A. Installing Drivers other than the Adaptec Embedded Serial ATA RAID Controller Driver

After you've installed the Windows Operating System, a screen as shown below will appear. You are ready to install software programs and drivers that have not yet been installed. To install these software programs and drivers, click the icons to the right of these items.




**Driver/Tool Installation Display Screen**

(***Note**: Click the icons showing a hand writing on the paper to view the readme files for each item. Click a computer icon to the right of an item to install an item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before proceeding with the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents of the CD. )

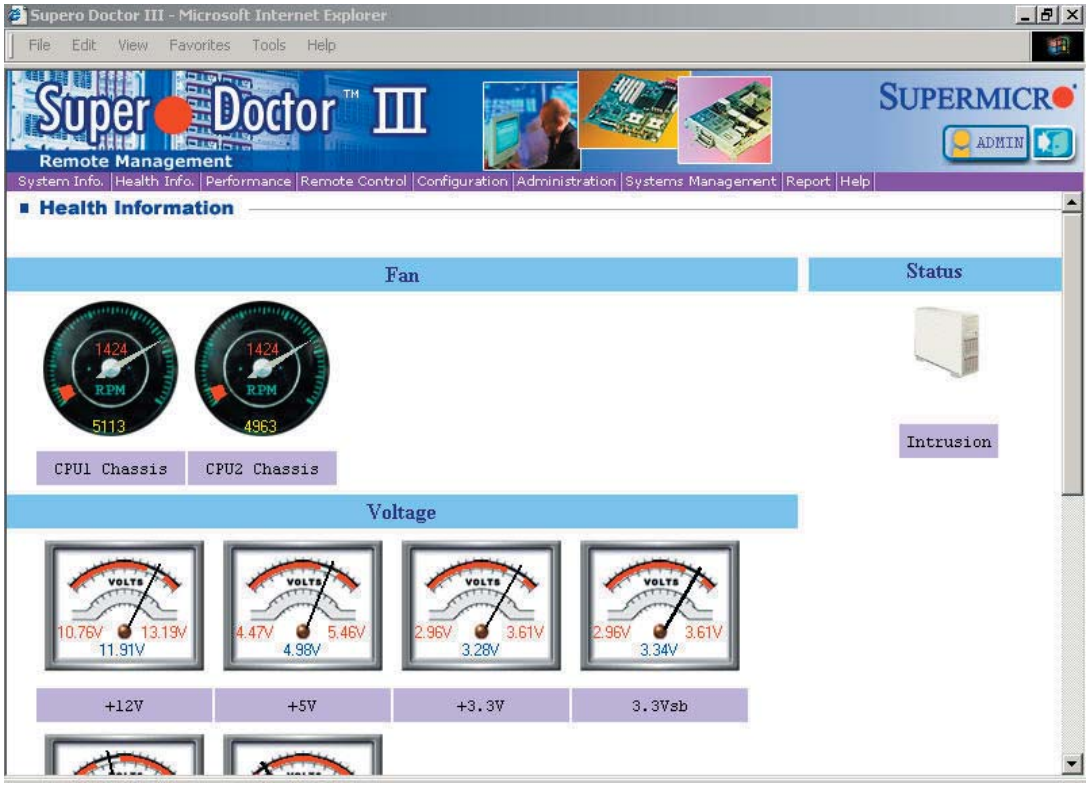
## B. Configuring Supero Doctor III

The Supero Doctor III program is a web-base management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called the SD III Client. The Supero Doctor III program included on the CDROM that came with your motherboard allows you to monitor the environment and operations of your system. Supero Doctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the Figure below for a display of the Supero Doctor III interface.

**Note 1**: The default user name and password are ADMIN.

**Note 2:** In the Windows OS environment, the Supero Doctor III settings take precedence over the BIOS settings. When first installed, Supero Doctor III adopts the temperature threshold settings previously set in BIOS. Any subsequent changes to these thresholds must be made within Supero Doctor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in BIOS.

**Supero Doctor III Interface Display Screen-I (Health Information)**



**Supero Doctor III Interface Display Screen-II (Remote Control)**

Supero Doctor III - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Super Doctor III
Remote Management
SUPERMICRO
ADMIN
System Info. Health Info. Performance Remote Control Configuration Administration Systems Management Report Help
Remote Control
Graceful Power Control
Open Console
Power Control
Enter
Comm.
Graceful power control
Supero Doctor III allows a user to inform the OS to reboot or shut down within a specified time (the default is 30 seconds). Before the system reboots or shuts down, it's allowed to cancel the action.
Requirements
Keep Supero SD3Service Daemon running at all times on this system.
Provide TCP/IP connectivity.
Power control

(***Note**: SD III Software Revision 1.0 can be downloaded from our Web site at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download SDIII User's Guide at: http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf. For Linux, we will still recommend that you use Supero Doctor II.)

## Notes